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THE AMERICAN
School Board Journal

A PERIODICAL OF SCHOOL ADMINISTRATION

★ **School Buildings After the War** — *Holmes and Shigley*

★ **Elmont Plans for School Buildings** — *Hanson*

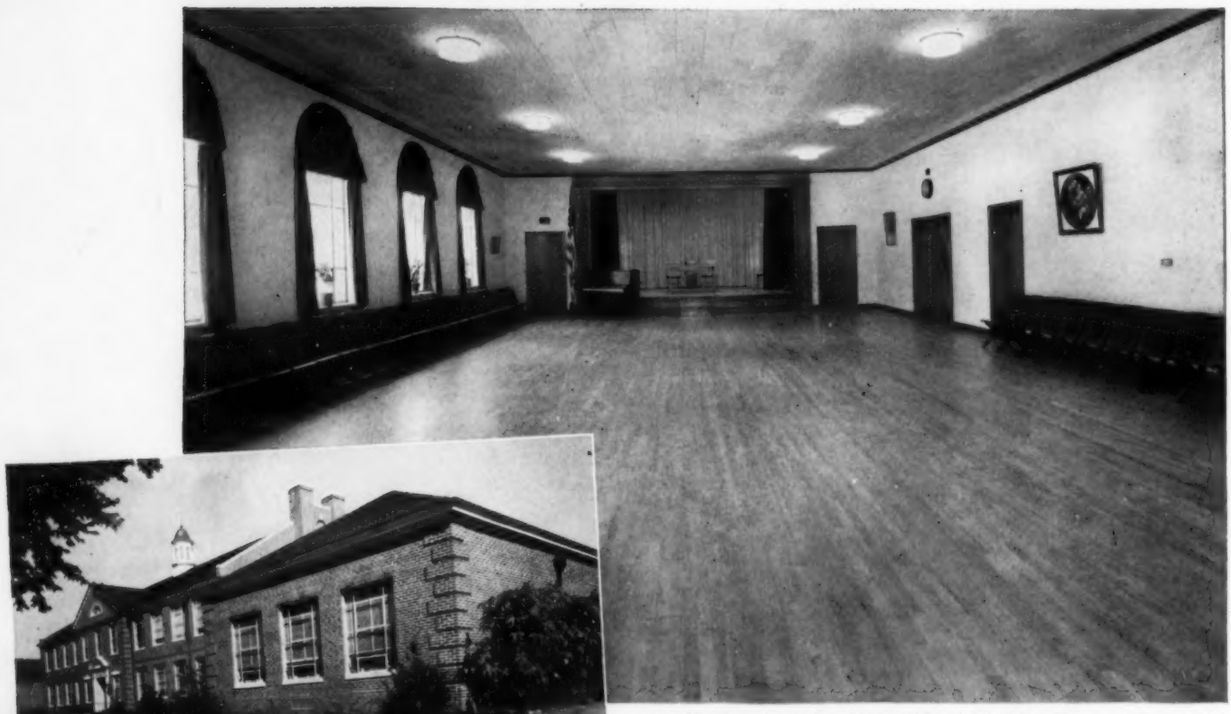
★ **Adjustments in School Plant Maintenance, Operation, and Utilization** — *Taylor*

★ **School Bonding Policy** — *Grieder*

★ **New Elementary Schools in San Diego** — *Crawford and Dailard*

VOLUME 106, NUMBER 1 JANUARY, 1943

Wichita knows from Experience
It Pays to Standardize on
"Maple *Throughout*"



Auditorium in Irving Grade School, Wichita, Kansas, floored with MFMA *Northern Hard Maple—Lorentz Schmidt, architect.*

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"Their experience with this type of flooring has been very satisfactory and, therefore, they continue its use," writes Lorentz Schmidt, architect.

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Hard Maple floors for schools cut maintenance costs to the bone—properly finished, mere brushing cleans them—an important item of economy in school administration.

In your planning—present or future—ask *your* architect about MFMA Northern Hard Maple, in strips or blocks, before you build or remodel. See Sweet's, Sec. 11/57, for catalog data.

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1780 McCormick Building, Chicago, Illinois

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(NORTHERN HARD)

THE AMERICAN
School Board Journal

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The contents of this issue are listed in the "Education Index."

Member, Audit Bureau of Circulations and Associated Business Papers.

The Year 1943, The Schools, and the War

The schools of America, in common with the Nation as a whole, can look forward to the New Year with no mere conventional expression of good wishes. And still the striving for individual peace and happiness, and the hope for collective peace and well being must be fully maintained in the souls of every American and must be inherent in the functioning of all our essential institutions.

In carrying on the grim business of war to a satisfactory conclusion, we must not forget the importance of fully winning the peace. The individual citizen together with the family, the school, the church, and finally the state must drive on collectively and cooperatively for the downfall of our enemies. But each one of these must think and plan and labor for the kind of a democratic world in which we are to live after the conflict. If we can take no true satisfaction from success in battle and its destruction of life, we can and must plan and work now for that kind of a democratic world which will result after the sorrow and labor of war. This new world must enable every man to achieve his true destiny and happiness, and must for the longest period assure peace between the nations.

There is here a tremendous responsibility — and a challenge — for our basic institutions — the school, the church, and the state. And the school especially must not fail in its full responsibility.

— *The Editors*

This Issue of the Journal

The present issue of the *Journal* is devoted to one important aspect of the problem of planning for the postwar period. Even though school construction is necessarily suspended, the thoughtful school administrator realizes that time and newer educational methods are causing school buildings to become obsolete, and that the daily wear and tear is contributing to hasten the day of needed replacement. In many communities the population is growing, or shifting to entirely new areas, so that new building construction must be resumed with vigor as soon as hostilities cease. While temporary expedients may be inavoidable now, they cannot be delayed beyond the day of peace. We must have no lost generation because of the failure of education and the lack of adequate schoolhousing.

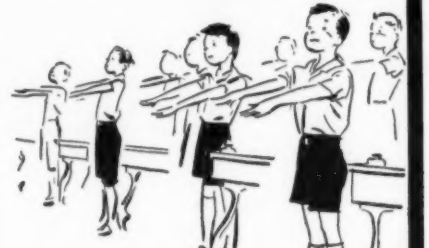
Especially at this time, timely anticipation of future schoolbuilding needs becomes a primary concern of boards of education. This not only contemplates adequate seating capacity for the pupil constituency but it must bear in mind the types of instructional areas, of work and play spaces that will fully enable the postwar school program to function. — *The Editors*

The Increasing Burden on Teachers and How to Relieve It

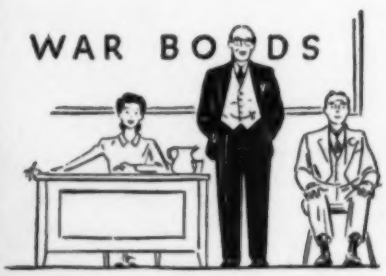
Here's one way schools have found to solve a major wartime problem—with the help of Mimeograph duplicators and Mimeograph brand supplies

Crowded classrooms in many cities are the result of the war, as new industries bring new families to the community. Mimeograph duplication helps by providing classroom materials for every pupil—keeping instruction more individualized.

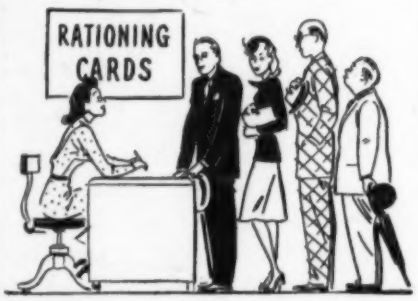
As many teachers leave for the armed forces and war industry, those at home must take up the extra load. The Mimeograph duplicator helps ease this burden, frees teachers from classroom routine, gives them more time for the business of teaching.



Increased emphasis on physical training, mathematics, and the sciences in wartime calls for additional classroom materials with wartime applications in many subjects. Mimeograph duplication is the quick, economical way to keep all materials up to date.



Wartime activities during school hours—stimulating war bond and stamp sales, salvage drives, and other projects—make additional work for Mimeograph duplicators. Mimeograph equipment also produces materials for projects and programs where textbooks are not available.



Wartime service to the community after school hours—helping get the rationing programs under way—makes extra demands on teachers' time and energy. Instructions—produced on the Mimeograph duplicator—help keep things going smoothly, lighten this extra load.

Make sure your Mimeograph equipment is doing all it can to help your school. Give it all the jobs you can. Telephone the Mimeograph distributor in your community for assistance—or write A. B. DICK COMPANY, Chicago.

Mimeograph duplicator

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THE AMERICAN
School Board Journal

Volume 106, No. 1 JANUARY, 1943 Subscription, $3.00 the Year

School Buildings After the War

Warren S. Holmes[1] and Arthur R. Shigley[2]

"What will school buildings built after the war be like, and what can school boards and superintendents do at this time in getting ready to meet the problem?" inquires the editor of this magazine.

"Automobile designers tell us," he says, "that all of the present standards in automobile design are likely to be scrapped after the war, and we shall have radically different cars. Apparently similar changes will take place in other fields. Will such changes also take place in school planning, and particularly in schoolhouse construction? Will new devices and new materials be introduced?"

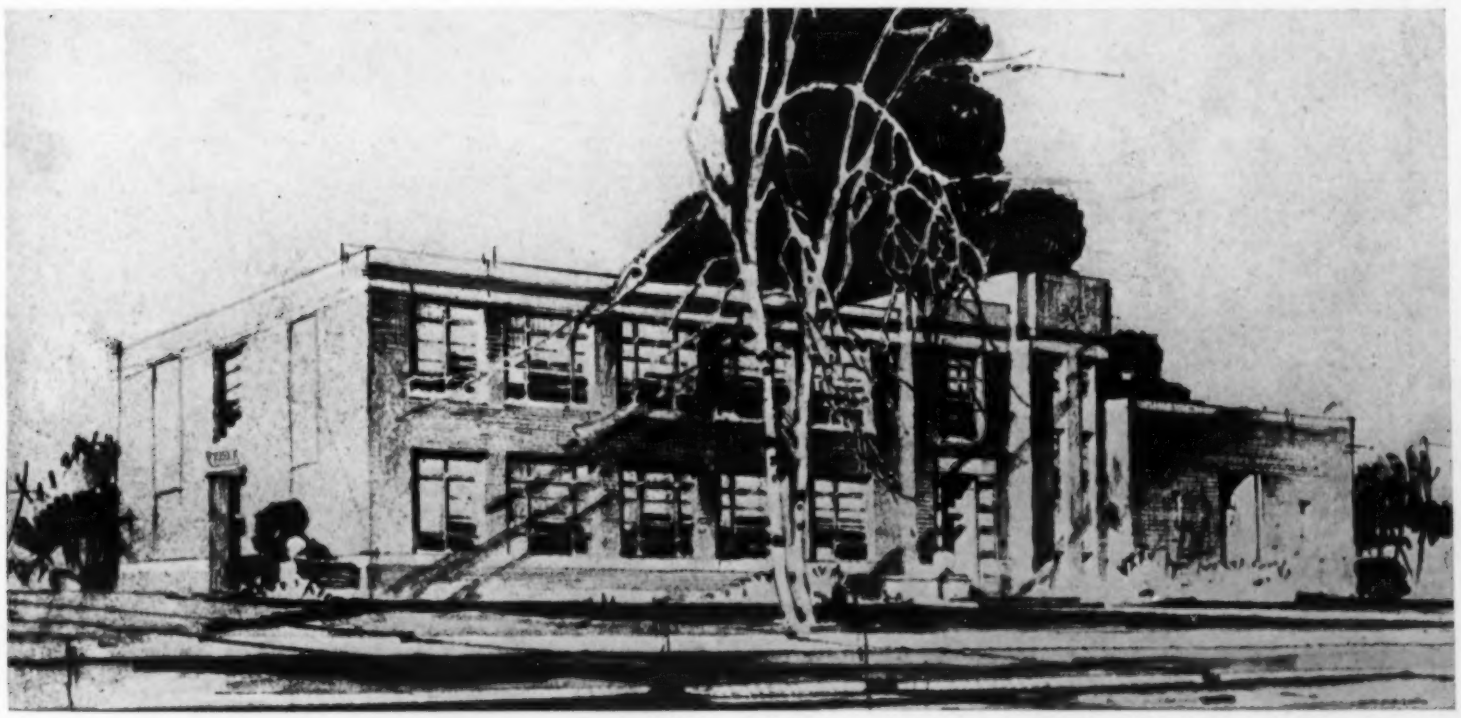
Yes, there yill be changes in both design and construction — and plenty of them. Some of these changes — let us hope many of them — will make for progress and betterment. Others will be introduced only for the sake of being different.

[1]Architect, Lansing, Mich.
[2]Educator, member of the firm of Warren S. Holmes Co., Lansing, Mich.

Building Exteriors

Perhaps the most noticeable change from the layman's point of view will be in exterior design. Undoubtedly, there will be a strong tendency toward what we have come to understand as modern architecture. Not necessarily modernistic design — there is a marked difference — the former a simplified and dignified design, the latter a forced style as unnatural and as illogical for modern school buildings as the gothic or classic styles. We have seen this tendency toward modern architecture in many school buildings designed just before the war, but only occasionally does one observe a truly successful effort. The greatest contribution that modern architecture has made to school design is to show that maximum beauty in architecture can be gained through simplicity of line, plain surfaces, and attractive colors, rather than expensive architectural ornamentation. The complicated cornices, moldings, and columns that characterize the traditional styles of architecture constitute unnecessary expense, to be avoided wherever possible both in the original cost, as well as the cost in maintenance.

Predictions made as generalizations of the changes to be expected cannot possibly fit all parts of a country with as varied a climate as the United States. School buildings designed in California, Arizona, and Florida, for example, will of necessity be vastly different from those in the Great Lakes region or in New England.



Architect's Perspective, St. Clair Elementary School, St. Clair, Michigan. — Warren S. Holmes Co., Architects, Lansing, Michigan.

Illustrations

The photographs and plans accompanying this article have been selected to give concrete illustrations to the ideas presented. The small elementary school at St. Clair, Mich., is conventional in its plan arrangements. Of special interest are the provisions made for community use of the gymnasium-auditorium, the special built-in features of the classrooms to facilitate work-experience procedures, and the emphasis placed on the aesthetic phases of design.

The shop and music building for Holland, Mich., is a new type of school building developed in part from the needs of the war training program. Plans and specifications are in progress for the construction of this building at the close of the war. When the school's shops became entirely inadequate for the duplicate use of the pupils and the workers training for the city's war industries, the girls' gymnasium was hastily converted into two additional shops. Many months of study have been devoted to developing efficient layouts for shopwork, music, and agriculture. The facilities provided in the existing school buildings are meager, indeed, compared to the new needs as developed for this building.

School Sites

Community requirements for summer playgrounds and adult recreation, as well as the schools' requirements for programs in physical education, are rapidly teaching the public the need for larger school sites. A case in point is the city of Lansing, Mich., where the school authorities were formerly satisfied with a city block, or even a part of a city block in some cases, for a school site. Not so now. In the city's last two school-building operations a site consisting of 27 acres was set apart for a junior high school, and for a senior high school, just being completed, a site of 31 acres. Moreover, the architect, working in close conjunction with the landscape gardener, school officials, and the city's recreational department, found that if a well-rounded educational program was to be carried out, not a foot of land could be spared from what seemed like excess acreage.

Adequate architectural settings for each of these beautiful buildings received first consideration. Adequate lawn space, areas for parking cars, a stadium, a football field, a practice field, a baseball diamond, softball diamonds, soccer and tennis courts, an outside running track, and a few unassigned free play areas worked in here and there where trees can be planted, all adds up to wishing there were a little more space rather than less.

Such well-developed sites are important to a city's health, an important element in municipal planning, and an unrivaled opportunity for teaching democratic living. It is as valuable, every foot of it, as the enclosed floor space of the building itself.

New Materials

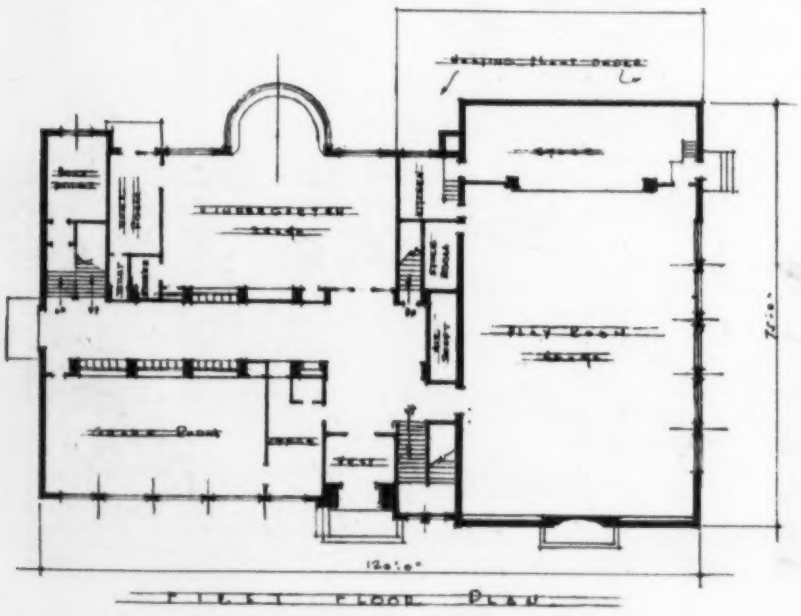
Steel sash and window frames have even now all but replaced wood for exterior windows. Extruded aluminum or stainless steel moldings, spandrels, and canopies and doors are commonplace features in modern design, the use of which should be greatly expanded by the increased facilities constructed for war production. Some of these items will likely be replaced with weather-resisting, colorful plastics. School buildings constructed in architectural concrete will continue to replace designs in brick and stone because of the sales pressure of cement companies, although in cold climates brick and stone resist the action of frost with resulting expansion and contraction much better, and often cost less.

An entire article could easily be devoted to the influences to be realized in school construction, equipment, and furnishings by the use of relatively new and vital materials — plastics. One cannot yet see them shaping the external appearance of school buildings to the extent we are told they are to function in automobile bodies and airplane fuselages, but they seem certain to find varied uses within the building itself. The ideal door for schools of the future, with its accompanying trim, can be made from plastics. This material is satisfactory for desk tops, and best for table tops. It functions well for certain kinds of hardware. If, as has been proven, it can be made a satisfactory substitute for silk hose, what then are its limits? Conceivably, it can be made a satisfactory substitute not only for wood, but also for ceramic tile, marble, terrazzo, and steel sheets for inside use — and as such, it is sure to be used for wainscotings, toilet partitions, counters, floors, furniture, and even shades and draperies, with probably better wearing qualities than the materials displaced.

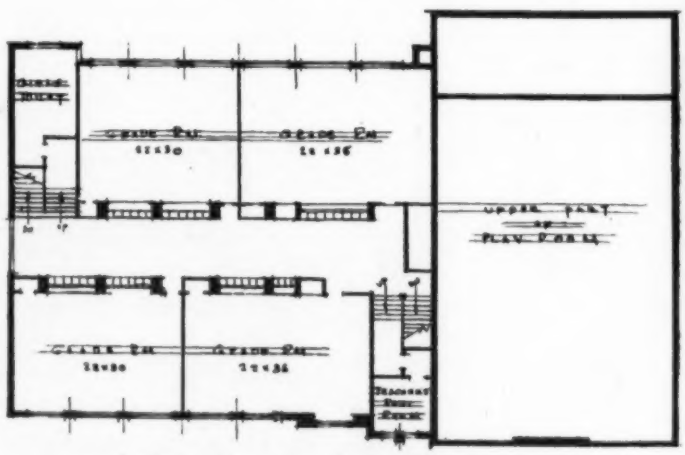
No discussion of building materials would be complete without mention of glass. Even it seems destined to have a counterpart in plastics for lighting fixtures, etc. Competition, together with scientific research, should give us a glass, admitting a high percentage of ultraviolet rays, within a price range suitable to the limited financial restrictions of school districts. Glass block seems to be a very useful material for the future, if its use will be sensibly limited to stair wells and to inside walls where borrowed light is necessary to improve illumination of otherwise dark corridors.

Relation of Building to Educational Program

The foregoing paragraphs record some of the most obvious trends in school-building planning for postwar living. Any institution, however, as conventional as our public school system is certain to adhere to group instruction administered and housed in convenient central locations. In fact, no one has ever discovered a more efficient and economical means of mass instruction. Pupils will continue to begin their formal work in some such department as the kindergarten, and those who do not later decide otherwise will end up in the university or college. But between these two points lie a variety of routes, many side tracks, and frequently changing emphasis, and the architect must constantly be



St. Clair Elementary School, St. Clair, Michigan. — Warren S. Holmes Co., Architects, Lansing, Michigan.



Second Floor Plan, St. Clair Elementary School, St. Clair, Michigan.

aware of and familiar with the educational problems in order that he may best draft their most efficient housing.

In fact, the only substantial basis upon which to advance a sane prediction of the nature of the postwar building is to anticipate as closely as possible what demands the war and postwar problems will make upon existing educational practices. Without doubt, every hamlet in the land will be represented for a time by one or more world policemen, stationed in some faraway country. Our new acquaintance with a smaller world will encourage more geography, history, economics, and government. Mathematics and science, correlated closely with shopwork, will be regarded hereafter as far more essential than formerly, in order that we be prepared for a highly scientific world. Classrooms must be improved to accommodate this changing emphasis. As never before we shall have trained diplomats, consuls, soldiers, and businessmen in every corner of the globe. We are certain to become the leading world power, and our educational program must prepare for that prodigious task.

It seems crystal clear that school buildings must be planned more than ever for pupil activity in every classroom, shop, auditorium, library, and playground. The future building is to become an educational workshop, not only for those within school age, but for the entire community. The public is going to demand of teachers that they be conversant with the application to everyday life of the tables, rules, and dates that so frequently have been taught simply as such, with no related connection with the lives of either pupils or adults, and it is going to insist that buildings furnish the appropriate setting for this improved type of instruction.

A Federal Works Program

We can anticipate almost for a certainty another federally sponsored public works school-building program. We may hope that both local school districts and federal authorities will correct the errors committed in our first experience of that sort. The element of haste should disappear, and architects can be selected with more attention to their proven abilities in the school-building field. Communities needing new construction should be developing their plans now, for the success of the next public works program depends upon the thoroughness with which the ground is prepared well in advance. The first federal program was conceived in haste and executed in greater haste, a defect that probably could not have been avoided in that instance, but there certainly will be no excuse for a repetition of the error.

Cooperative Planning

The first step, therefore, in planning the best buildings for the future will be coopera-

(Concluded on page 70)

The correct use of glass block, the tile, and the linoleum floor produce a harmonious and most useful bay in the St. Clair kindergarten.
(Fred M. Layle Photo)

Knotty pine provides a dignified yet homelike entrance to the kindergarten at St. Clair, Michigan.
(Fred M. Layle Photo)

The built-in equipment is simple, attractive in color, and of a scale adjusted to its small users.
(Fred M. Layle Photo)

Heating and Ventilating the Postwar School

D. E. McGrath[1]

So you folks are planning a new school building or two just as soon as materials are again available. Who is your architect? What school experience has he had? Does he recontract for his mechanical layout of heating, ventilating, and electrical data? He does. Well, then, what experience do these people have? Are they a sales outlet for some particular system? Do they favor preliminary, and final criticism of the layout by practical operations men, and will they readily agree that the school board should maintain a competent superintendent with equal authority with the architect in the interpreting of intent and extent of the specifications and plan during building operations? Well, if you have that settled to your complete satisfaction, I guess you're ready to make plans.

Now let's see what kind of a building you can afford. If you are well financed and have adequate support for not only your original cost, but have no doubt that plenty of operating funds will be readily available, and that there is no doubt that maintenance is not too large a factor, and you are willing to employ a thoroughly competent engineer to operate this plant, then you are ready to plan the "Ideal School." So look around, use your imagination, study and consult with the experts as to what the future holds, and the results will be amazing. (An expert, as you know, is an average technician away from home.) But when the day the proposals for construction are opened and read, I'll gamble that the quotations are way above the estimate, and the search will start for ways and means to cut the costs by revision and omission, starting invariably with the heating, ventilating, and controls. The final result being that your school system has another of the same old headaches that were built in the past. (Exceptions are expected.)

A Streamlined System Suggested

But if you are an average school system, not too well financed, subject to the usual ups and downs, willing to adjust your thoughts and plans on the basis of past experience and mistakes, willing to streamline your requirements, stressing common sense, sound construction, simple beauty, usefulness, simplicity, efficiency, and low-cost operation in the mechanical design and insist on its being complete, then I believe you will incorporate some of the ideas I list below, and insist that the equipment be modern, up to date, and of thoroughly reliable manufacture. Too much dumping of obsolete equipment on unsuspecting schools has been the practice in the past under stringent competition.

Consider these points with your architect in the light of conditions at the site of the structure: In smaller buildings, one boiler of adequate capacity. In larger buildings, more boilers if required. Stand-by equipment deteriorates quickly and is not necessary with modern repair and maintenance methods. (This is true of other equipment as well.)

Give the operator simple stack draft regulation, automatic if you will. An underfire and overfire draft gauge and stack temperature gauge are essential to good operation. Stoker the boiler and protect it with a low water make-up device. Operate on low pressure steam. Use a combination vacuum and boiler feed pump of the high-vacuum type capable of operating up to 25 inches of vacuum.

Now you must consider, beyond this point, new developments in connection with the type of system of heat and ventilation you require. The New York system can be efficient and successful if the site is not in a smoky, dusty area. Let's consider it with modern treatment: You are using window ventilation. Use pivoted sash (your choice of wood or steel). Place your radiation under the windows, and use plenty of it, equipped either with lock-shield valves or orifice elbows. You must have draft-tight classroom doors. You can stop there or you can install exhaust grilles with adjusting louvers either in the inside walls or in the cloak hall if the wardrobe type is used. These exhaust grilles should be connected by ducts to a collector exhaust fan either in the attic or, preferably, in the engine room. Cold and foul air is then exhausted from the rooms to the outdoors, and the c.f.m turnover is regulated by the grille adjustment. Taken through the wardrobe, the exhaust airs and dries wet clothing. Window air is adjusted to the air exhausted. The amount of steam required is adjusted permanently for each room by adjusting the lock-shield valves or the orifice at the radiators. Outside temperatures are compensated for, in any system where radiation is used, by the use of the following modern controls:

A New-Type Forced Air System

Use *zone control valves* on the steam mains. Zone the building in accordance with prevailing wind exposures. You can operate boilers from subatmospheric (negative pressure) to positive gauge pressure, giving a much more flexible operation. High vacuum makes this possible. A galvanometer and averaging zone thermometers will give correct temperatures in each zone and operate the supply valves for each zone, giving each the quantity of heat required by its exposure and condition of operation. Zone control is here and is definitely a modern scientific contribution. It merits your consideration as one of the most efficient and least expensive of approved systems.

If you like the forced-air ventilation of the split system — and it does have many advantages — we shall modernize it briefly. Place your radiators as in the New York system, using the same zone controls. Less room radiation need be used. Take the fresh air to your fan from the roof if possible, in a spot least affected by smoke. Filter it if you will — with dry or electronic filters — to remove dust, dirt, and smoke. Control humidity with atomizer-spray equipment. Temper the air with controlled coils, using high vacuum, subatmospheric steam in mild weather, pressure to two pounds in cold weather. Distribute the air to the rooms at moderately high velocity.

Now let's depart from ancient practice and get efficiency. Introduce this air from the front and rear of the room, using at least three small, high velocity, quiet, directional grilles (air-conditioning type) in each end of the room. This assures perfect distribution and a very small differential in the ceiling and floor temperatures. The same number of outgoing grilles should be placed at the floor level. Two of these should be placed at the outside wall corners to remove cold air from the windows and walls at these critical points. The area of outgoing grilles should be not greater than the incoming grille area and should preferably be slightly smaller. This makes for better air distribution.

All Systems Have Faults

Now let's correct one of the outstanding faults of both the split and the full-fan systems: Do not run outgoing air to the attic. Return it to the basement and exhaust it near the supply fan. Interconnect dampers so that one third to two thirds or all of this air can be recirculated by the fan or exhausted at will at the ground level. Cold air should seek the lower levels by gravity when the fans are not in use. Thousands of operating dollars are wasted each year in fuel, through heating attics and overcoming cold air back-drafted through the room outlets of the foul-air ducts that are carried to the attic instead of following the laws of gravity and physics to the basement where these ducts belong.

This subject is too large to carry further, but the mistakes that are made in this field are the ones that are paid for to the end of time in fuel and maintenance dollars ill spent.

A final word to you who would plan and build: Plan long and carefully. Cut if you must, but cut not where it will hurt the worst in years to come. Conceal no service or pipe that can be exposed to care. To build is but the first cost and consideration. To operate and maintain is the measure and standard of all the tomorrows. We shall bless you or curse you, all in accordance with the plans and specifications. The light of bitter experience cast on the shadows of the future is the brightest light of all.

[1]Superintendent of Buildings, School District of the City of Pontiac, Mich.

Elmont Plans for School Buildings

Abel A. Hanson[1]

The planning of school buildings in a rapidly growing community should proceed only from a detailed study of local housing and population trends. No board of education is ever justified in simply "hauling off" and building schools. Complete information and logical interpretation are essential to the process of providing the facilities which in larger measure may shape a program of education for fifty years to come. Moreover, community development can be controlled substantially by planning school buildings in terms of community needs. Education demands and social emphasis indicates the pressing need for local community analysis as a basis for school-building planning. Elmont, Long Island, N. Y., has attempted such an analysis.

To understand the building program of Union Free School District No. 16, Elmont, Long Island, N. Y., it is necessary to know something of the community about which the sprawling school district is centered.

Elmont, an unincorporated territory, is in Nassau County, N. Y., adjoining the Borough of Queens on the east. In Elmont are three of the largest and newest cottage developments on Long Island. Although in area and population Elmont composes most of Union Free School District No. 16, the latter also includes the incorporated villages of South Floral Park and Stewart Manor and parts of the incorporated villages of New Hyde Park and Floral Park.

Thus, it is apparent that Union Free School District No. 16 is not a compact and contiguous territory bound together by many ties of common interest as is true of most school districts. Rather, the area is a composite of 11 or 12 separate communities, each of which is inclined at times to draw a restraining circle around itself and to attempt to live within its local sphere of influence. In fact, the only legally established authority which binds the district together as a unit is the school system.

Moreover, since most of Union Free School District No. 16 is unincorporated territory, municipal function rests with the county government. No local controls are available in community planning, housing regulations, zoning restrictions, police service, sanitation, parks, traffic regulations, and other public services. In this situation it is difficult to relate educational planning to community planning; more difficult, in fact, than in situations where school districts coincide with villages, cities, or other political subdivisions of the state.

[1]Acting Supervising Principal of Schools, Elmont, N. Y.

New Home Construction

Union Free School District No. 16 has felt the "growing pains" of new housing and increasing population no less than three times in the past 25 years. The largest and most important of these growing periods began in 1937. New home construction by half year periods is shown in Table I. It will be noted that the rate of home construction increased each half year until *July, 1940*. It will also be noted that despite the restrictive intent of recent federal regulations, new housing has continued to blossom forth even during the first six months of 1942.

Location in Union Free School District Number Sixteen	1937	1938		1939		1940		1941		1942	Total
	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	
Elmont	23	26	94	226	310	435	281	161	416	185	2,157
Stewart Manor	0	0	0	5	2	4	1	0	26	0	38
South Floral Park	0	0	0	0	1	2	1	1	0	0	5
Floral Park	7	8	4	10	13	11	23	44	0	0	120
New Hyde Park	0	3	2	1	3	1	2	2	0	0	14
Half Year Totals	30	37	100	242	329	453	308	208	442	185	
School Year Totals	67		342		782		516		627		2,334
Calendar Year Totals		137		571		761		650			

TABLE I

Census Averages Aid in Predictions

In planning a school-building program for a rapidly growing community, a statistical analysis of housing development is of great value. Census averages for family size and census percentages for school age children may be used in conjunction with housing totals, and thus may reasonably accurate estimates of near future enrollments be determined.

For example, in the four years preceding July 1, 1941, there was an average of 427 new houses constructed and occupied in Union Free School District No. 16. According to government census reports, the average size of family in Nassau County for the time period in question was 3.43 persons. Thus by simple multiplication (427 $\times$ 3.43)

Architect's perspective of Covert Avenue Addition, Elmont, Long Island, New York. While identity in architectural design was impossible, splendid harmony has been achieved. The addition is to the left while the old building is at the right.

Typical scene of a block of cottages under construction in Union Free School District Number Sixteen, Elmont, Long Island, New York.

the average annual population increase in the school district was 1464. Furthermore, the same source of information indicates that 14.81 per cent of the total population were children of elementary school age. By multiplication again (14.81×1464) it is apparent that there had been an increase of 217 elementary school pupils annually.

Enrollment Records Verify Predicted Needs

The actual enrollment records for Union Free School District No. 16 for the period under question do not show quite so large an increase as the housing study indicates. However, when the 217 pupil average is decreased by the number of pupils known to be enrolled in private schools and legally excused from school attendance, the resulting figure coincides almost exactly with the actual enrollment increases shown on the enrollment table. Actual enrollments for the years 1938 to 1942 inclusive are shown in Table II. The figures constitute a second gauge on probable future school-building needs.

TABLE II. Enrollment in Sixteenth District Schools, Elmont, N. Y.

Year	*Increase*	*Total*
1938–39		1,781
1939–40	56	1,837
1940–41	139	1,976
1941–42	133	2,109
1942–43	98	2,207

Overcrowding Analyzed

A third item which figured strongly in local estimates of future school-building needs was the extent to which existing facilities were overcrowded. As compared to other phases of the problem, this analysis was relatively simple. Although the figure was recognized to be somewhat high for ideal school conditions, a hypothetical average of 30 pupils per available classroom was arbitrarily assigned. Table III shows the number of classrooms available by buildings, normal pupil capacities in terms of the arbitrary average, actual enrollments as of September, 1941, and the extent of overcrowding. According to this computation existing buildings were overcrowded to the extent of 620 pupils.

TABLE III. Overcrowded Condition of Sixteenth District Schools

School	*Number of Rooms*	*Normal Capacity*	*Actual Enrollment*	*Number Beyond Capacity*
Elmont Road	12	360	550	190
Covert Avenue	12	360	500	140
Belmont Blvd.	27	810	1,100	290
Total	51	1,530	2,150	620

The influx of additional pupils to the schools of Union Free School District No. 16 created conditions under which it was necessary to begin a half-time attendance program for large numbers of children. At the time the local building program was being planned 530 youngsters were so scheduled. Obviously, this figure overlapped with the previously described figure dealing with overcrowding. However, it was apparent that the overlapping was but partial because each dealt with different phases of the same basic problem.

It was therefore reasoned that since 530 children were attending school half time, one half of this number, or 265 children, could be accommodated on a full-time basis without increasing existing building space. This left a balance of 265 children to be provided for in the proposed new building program.

Recapitulation

Thus, in attempting to determine the amount of building space for immediate construction in Union Free School District No. 16, three complementary phases of pupil population trends were analyzed. First, enrollment increases for the next four years were estimated at 150 pupils annually, provided housing trends approximated the pace of the preceding four years. Second, existing school buildings were overcrowded to the extent of 620 pupils. Third, 265 pupil stations had to be provided because of the existing half-time schedule. Thus, it appeared to be necessary to plan buildings which would accommodate approximately 1485 children. Table IV presents these data in itemized form.

TABLE IV. Need of Additional Accommodations

Enrollment increases expected in the next 4 years	600
Estimated overcrowding of the existing 3 schools	620
Children needing facilities because of the half-time schedule	265
Total children in need of school facilities	1,485

Factors Studied Simultaneously

The preceding phases of housing and population studies have been presented in sequence for purposes of clarity. Actually they were in process simultaneously. They present together what has proven to be an accurate picture of the number of children for whom provision should be made in the new building program. However, there still remained the equally important question of the type of facility needed. At what age levels were enrollment increases greatest? What distribution, in terms of age, could be made of the increase? In short, what pattern was the press of increasing school population taking?

School Census Comparisons Developed

The answers to these questions were sought and found in the permanent continuing school census maintained in Union Free School District No. 16. Table V presents the school census by age groups for each of the years 1938 to 1942 inclusive.

Age	Under 1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Total
Year 1942	157	330	300	330	311	360	320	322	308	306	293	298	329	272	265	269	279	255	5306
1941	195	255	261	287	279	293	325	307	292	286	289	313	277	266	282	282	256	267	5012
1940	156	186	247	241	220	256	273	264	254	266	286	256	248	280	286	239	263	243	4486
1939	106	162	166	170	191	235	219	222	229	259	225	226	246	263	235	242	239	241	3676
1938	100	124	133	144	171	136	168	188	223	192	162	211	230	308	219	200	212	190	3351

TABLE V. School Census by Age Groups, Sixteenth School District, Elmont, N. Y.

By reading up in the perpendicular columns the increase for each age group can be seen. For example, the five-year age group has increased steadily from 136 in 1938 to 360 in 1942. In a similar manner, by reading up in the diagonal columns, the growth of a particular group may be followed over a period of years. For example, the 5-year-old group in 1938 numbered 136; as a 6-year-old group the number was 219; as a 7-year-old group 264; as an 8-year-old group 292 and as a 9-year-old group 308. Thus a device such as Table V represents two comparisons for each age group which are mutually sustaining and effective.

Age	Under 1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Total
Year 1938	100	124	133	144	171	136	168	188	223	192	162	211	230	308	219	200	212	190	3351
1941	195	255	261	287	279	293	325	307	292	286	289	313	277	266	282	282	256	267	5012
Per Cent Increase	.95	1.06	.96	.99	.63	1.15	.73	.63	.31	.49	.59	.48	.24	-.14	.29	.41	.21	.41	.50

TABLE VI. Distributed School Census

An air view of Elmont, New York, with the new Alden Terrace Development showing a pattern of contour streets in the foreground.

Percentage comparisons were also used effectively. Table VI presents a comparison of the distributed school census for 1938 with the distributed figures for 1941. It will be noted that the total increase for the three-year period was 50 per cent. It may be noted further that in the older age groups the percentage increases were relatively small, while at the primary and preschool age levels the percentage increases were phenominally high. For example, 5 year olds increased 115 per cent in three years time. For the same period 1 year olds increased 106 per cent. In fact, the average percentage increase for children 6 years old or less was approximately 96 per cent.

Here, then, was conclusive evidence indicating the type of school facilities needed immediately. Obviously, since the greatest increase in school population was at the primary and preschool age levels, the greatest need for school buildings existed at that level. Moreover, it was concluded that even though new housing was to stop completely, enrollments would continue to increase over a period of at least five years.

Housing Saturation Studied and Used

The preceding facts relating to housing, population, and enrollment trends were conclusive evidence to the board of education that facilities for approximately 1485 elementary school children were needed as soon as they could be erected. These building needs were expressed in terms of a three-building proposition which was submitted to the people. It was anticipated, rightly, that some people not familiar with the facts would conclude that the board of education was overbuilding. Therefore, in order to inform the people more fully on housing potentialities and as a further check on the data already available a complete study of housing saturation was made.[2]

In the case of plotted areas this process was relatively simple. The size of typical lots was determined, the number of lots used typically by homeowners was discovered, and zoning regulations for the neighborhood were examined in detail. With these facts as guides it was computed in the plotted areas alone that it was possible to build 11,389 more houses in Union Free School District No. 16. When this figure was compared to 4513, the actual count of houses in existence as of July 1, 1941, it was apparent that future housing possibilities were tremendous. In fact, the per cent of housing saturation in plotted areas alone was only 39.63 per cent.

Unplotted Areas Included in Estimates

Further, it was obvious in the community that unplotted farm land was being rapidly taken over by realtors for purposes of housing development. Six such unplotted areas remained, two of which were for sale.

In attempting to determine the number of houses it would be possible to build on these unplotted areas it was necessary to study carefully the zoning regulations for surrounding developments, to make careful allowances for streets, to determine whether gridiron or contour layouts were in prospect, and to finally set up a square-foot allowance for each possible home. Finally, it was possible to determine the total number of homes it would be possible to build in all of these unplotted areas. Table VII provides this information.

TABLE VII. Possible Growth of Sixteenth School District

Designated Areas	*Number of Houses in Existence*	*Possible Future Number of Houses*
1. Areas computed by lineal frontage (plotted areas)	4,513	11,389
2. 82 acre section	5	620
3. 30.1 acre section	1	209
4. 141.1 acre section	14	983
5. 255.6 acre section	16	1,979
6. 123 acre section	21	751
7. 32 acre section	0	166
Total	4,570	16,097

From Table VII several important comparisons may be made. First, in plotted areas alone there still existed room for over twice as many houses as were already in existence. In the unplotted areas the number of houses possible was large also, but considerably less than in the

(Concluded on page 58)

[2]DeKock, W. D., "A Study of the Evolution of a Land Area and Its Effect on Education," Teachers College, Columbia University, 1941 (typed).

The Owensboro Technical High School

E. C. Landberg[1]

The growth of modern education in American cities has embraced not only new subjects, new methods, and new objectives but also entirely new types of school organization. All of these developments have rendered the old classroom type of building less adapted to give efficient service and have necessitated more careful planning of functional instructional areas arranged for the special activities of the new types of classes, and of personal and group instruction, of study, work, play, and special forms of activity. These facts and the periodic study of local educational and social needs have led the Owensboro, Ky., board of education to study the building plant situation and to carry on a building program which will maintain the entire plant at a high point of service and efficiency. The new Owensboro Technical High School is an important unit in the program.[2]

In the erection of the new technical high school, the board of education has sought to serve the present educational program and to anticipate future needs and demands for industrial arts and vocational education through a flexible plant fully adapted to a constantly growing program in these fields.

Owensboro is primarily an industrial city —an important part of the Cincinnati region which extends along the north and south banks of the Ohio River. Analysis of the local situation has disclosed the fact that 79 per cent of the parents of high school pupils are employed in industrial occupations and that an equally high percentage of the present enrollment will find their way into mechanical or industrial jobs. The need of a technical high school which should be more than a source of the bare elements of mechanical skill and information was clearly indicated. Recent labor laws covering age employment, minimum wages, and other aspects of youth welfare put restrictions upon the apprentice method of learning the trades and make it necessary for the schools to retain students and to provide basic knowledge and skills which industry formerly provided. While the war effort has somewhat interfered with the program in force before Pearl Harbor, preinduction courses have been of equal importance. Both before the war and at present the school has the duty to provide courses which prepare directly for important occupations. The limited academic offerings of the older type of high school are not sufficient for large groups of children.

The automotive shop is equipped to undertake major repair jobs as well as routine service work.

The auditorium-gymnasium has been found particularly flexible in use.

The new Owensboro Technical High School offers work in the shop and related courses needed for technical, commercial, and industrial departments under a full four-year program. Academic subjects, supporting the industrial arts and vocational subjects, are emphasized. The school is essentially a finishing school for those who must enter work after graduation or even at the end of any earlier school year. Cooperative classes have been organized for students who must earn while they learn, and boys and girls in the upper classes spend alternate periods in school and in local workshops or stores. The special courses for girls include office work and stenography, homemaking, sewing, cooking, beauty culture; the vocational courses for boys are largely limited to auto mechanics, woodworking, machine shop practice, electric wiring and motor repair, printing, aviation ground work, welding, drafting, and showcard writing.

The Owensboro Technical High School, considered one of the finest vocational schools

[1]Member of the Firm of E. C. and G. T. Landberg, Architects, Cincinnati, Ohio.

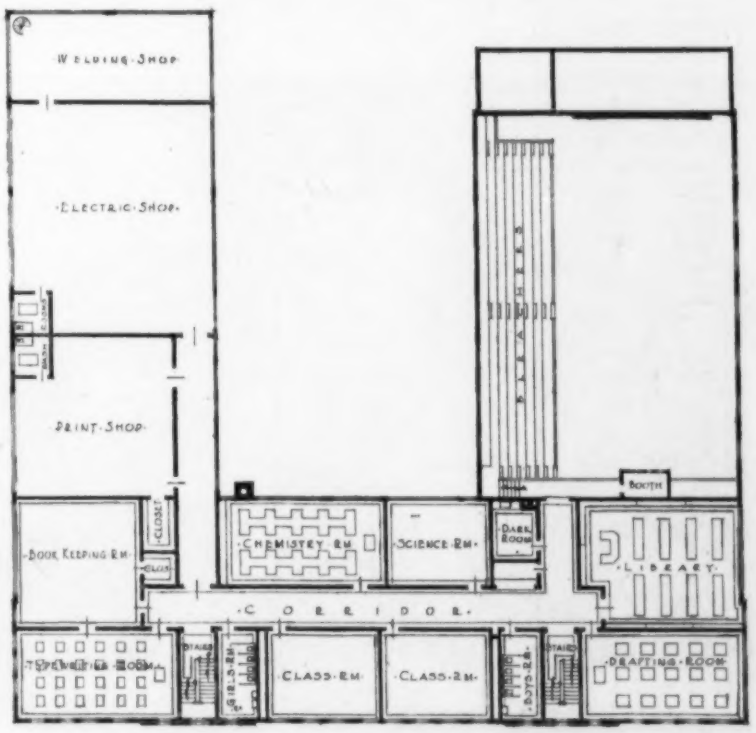
[2]The Robert E. Lee School, an elementary building, erected under the program, was reviewed in the SCHOOL BOARD JOURNAL, December, 1938, p. 35.

General Exterior, Owensboro Technical High School, Owensboro, Kentucky. — E. C. Landberg, Architect, Cincinnati, Ohio.

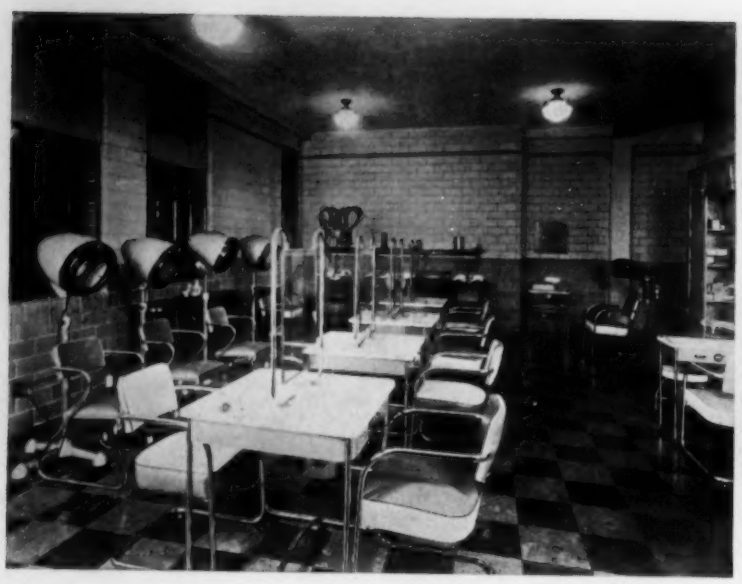
in the state of Kentucky, was completed in 1941, at a cost of $199,751. This three-story, U-shaped structure, located at the corner of Frederica and Fifteenth Sts., in the city of Owensboro, Ky., is completely surrounded by many large and beautiful ancestral trees, which lend dignity and atmosphere to the colonial style of architecture employed for the exterior.

The arrangement of rooms has been made to provide for the greatest instructional and administrative efficiency. The cafeteria and kitchen are centrally located on the first floor; rest rooms on all floors are situated near the stairs; the shops are far enough away from

Third Floor Plan, Owensboro Technical High School, Owensboro, Kentucky.

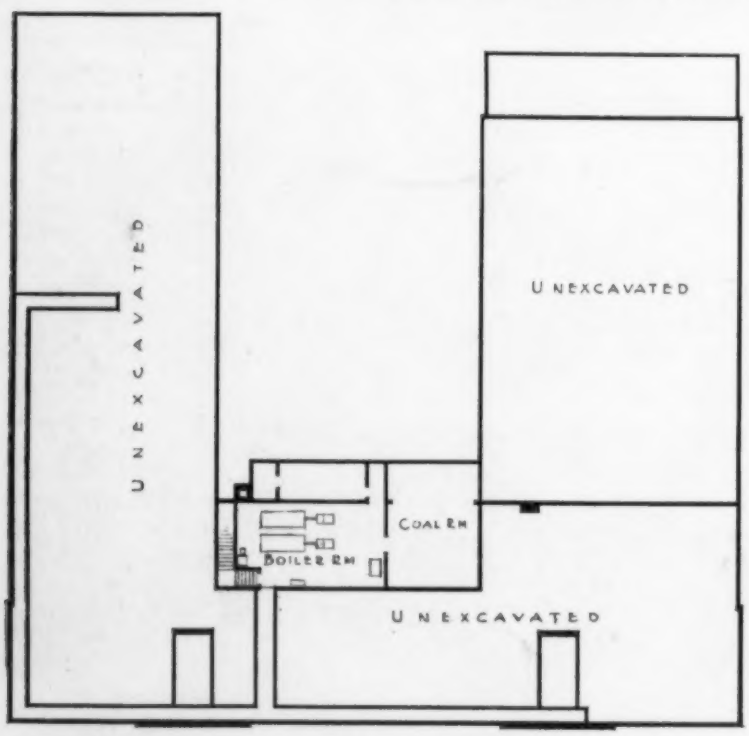


Second Floor Plan, Owensboro Technical High School, Owensboro, Kentucky.

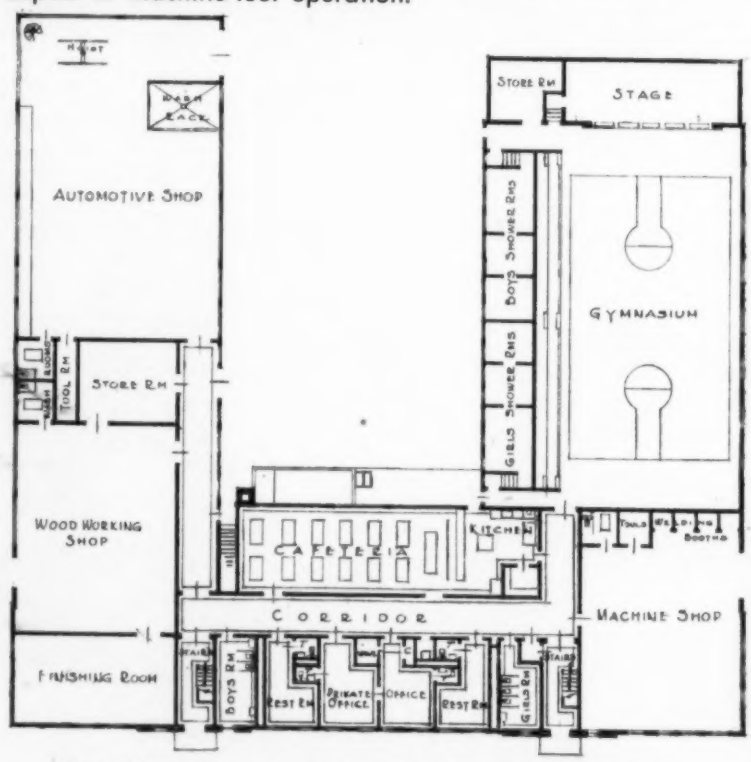


Left: the beauty culture laboratory. Right: the welding shop.

Left: the main woodworking shop has a full complement of machines and hand tools. Right: the machine shop provides experience in every aspect of machine-tool operation.



Basement Plan, Owensboro Technical High School, Owensboro, Kentucky. — E. C. Landberg, Architect, Cincinnati, Ohio.



First Floor Plan, Owensboro Technical High School, Owensboro, Kentucky. — E. C. Landberg, Architect, Cincinnati, Ohio.

the academic classrooms so that noise and odors do not interfere with study. This last has been accomplished by placing the shops in the left arm of the "U." The automotive shop is located on the ground floor, making it possible to drive cars in from the street.

The right arm of the building contains a 97 by 65-ft. combination auditorium-gymnasium, complete with stage and bleachers. Adjoining are locker rooms, shower rooms, etc.

The bottom of the "U," or front section of the building, has been devoted to offices on the first floor and classrooms on the second floor, including a library and study hall. The third floor has been largely set apart for the girls, for here are located the domestic science rooms, beauty culture laboratory, etc., in addition to five classrooms.

Built with all concrete frame and floors and brick walls, the building is fireproof and will resist the usual wear and tear for many decades. It is planned so that, with very little expense, partitions can be moved and reset, thus providing the flexibility which modern planning for an expanding educational program dictates.

The exterior walls are red, sand finish, mingled-shade brick with Indiana limestone trim. The sloping roofs are of slate; flat roofs are of poured gypsum. All interior partitions are glazed tile of a light buff color with a wainscot of a darker shade. The ceilings in the classrooms, corridors, auditorium, and offices are finished with acoustical plaster. The floor of the gymnasium is maple, laid in blocks. The concrete floors of the classrooms, corridors, and offices are covered with alternate blocks of marbelized tan and brown asphalt tile. In all shop areas the concrete floors have been treated with a hardening material to make them dustproof. The lobbies, stair treads, landings, and rest rooms are terrazzo. Blackboards are of natural slate. All interior trim is painted a pleasing light "school brown" to harmonize with the walls and floors.

The building is complete in its mechanical and its electrical equipment so that the student body will have efficient conditions under which they will learn. The health of students and teaching staff is fully provided for by controlled ventilation of the most modern type and by properly designed lighting. The radio system is arranged so that the student body can hear any outside broadcast the teachers may wish them to hear. In addition, records can be used for musical and instructional programs, and announcements can be made directly from the main office. There is also a talk-back feature so that each teacher can speak from the room and be heard by the principal at the office. A telephone system for intercommunication between the office, the shops, and the classrooms is also provided.

The building is complete in every respect to provide adequate academic and technical training for both boys and girls.

The plans and specifications were prepared by E. C. and G. T. Landberg, registered architects, of Cincinnati, Ohio, and resident supervision was provided by the architects out of their own organization.

Why Landscape the School Grounds?

C. P. Holway

The new school had been carefully planned, and now it was finished. Everything had been thought of — correct lighting, proper seating, corridor traffic, and all the matters with which school builders are today concerned. But when it came to bringing the whole conception into fullest completion — beautifying the grounds with trees and plants — see what has happened:

There is a lawn, of course, and a few trees which were growing on the plot before the school was built. Then some stiff evergreens were rammed into the ground at the corners and at either side of the main entrance, and the job was done.

The fine new school was "landscaped."

Month in and month out, the evergreens will stand their starchy green up against the building walls, altering their color slightly with the seasons, but not much. The trees, elms at best, will hold up graceful canopies during the summer — when the school is closed; when school opens in the autumn they will quickly drop their drab, uncolored leaves at the first frost.

But out near the city limits, on the plots of the local nurseryman, scores of beautiful trees, shrubs, and perennial flowers will bloom from earliest spring until latest fall. They are not particularly expensive — in fact, many of them cost a good deal less than the evergreens. They do not call for any particular care — in fact, they may thrive better than the evergreens.

Why, then, aren't some of them in the schoolyard?

Perhaps I should stop right here and note two things before we go any further. The "landscaped" school which I have described cannot be called a typical school, most certainly not; for many schools, as you have seen in the pages of this Journal, are beautifully planted. Yet, there are far too many such schools, both new and old, and it is about these that we are concerned.

And about the evergreens: It is not that we dislike them or disapprove of their being planted. What we decry is their exclusive planting — a fad indulged in far too much. If enough of them were planted, in well-balanced masses, it would not be so bad. But standing them around a building like frozen sentinels is neither good gardening nor pleasing architecture.

Why a school suffers such a planting, or none at all, I do not know. But here, perhaps, are some reasonable excuses and an exposure of their invalidity.

1. *Ample planting is too expensive.* Except on the very largest area, planting does not need to be expensive at all; and it can cost amazingly little if properly selected *young specimens* are planted. An example: An upright yew 4 to 5 ft. tall will cost around $8; but $10 will buy *ten* of these hardy trees in the 15 to 18-in. size. Almost the exact same costs apply to the beautiful pink-flowering dogwood; and the same ratio of cost obtains generally throughout the entire nursery list.

Young specimens "take hold" better, too, and reduce the chance of transplanting loss.

2. *An expensive landscape architect is nec-*

Even at night the lines of an old school building can be softened and beautified by carefully planned planting. The Coffeyville Junior College, Coffeyville, Kansas, is a beauty spot in the community at night as well as in the daytime.

The Abraham Lincoln High School at Los Angeles makes full use of native shrubs and flowers and sub-tropical plants to provide a true beauty spot in a residential section.

essary. Most certainly, for a planting of any considerable scale, it is wise to retain such a professional, but it is by no means absolutely necessary; and, where the school building is a modest one, the local nurseryman with very few exceptions knows his business well enough (and has enough pride in his reputation) to give the schoolyard a practical and satisfying completion. In fact, offered such an opportunity, he will probably exert particular care and skill, for a job well done here is a splendid ethical advertisement for his ability.

3. *There is not enough room on the school plot — playground or tennis courts take up all the space.* Sixty square feet can be made as beautiful as 600. And it is rare to have a school plant, even a "downtown" school, where adequate space cannot be found for a few trees of the right kind, a swatch of lawn, a small hedge, some vines, and window or balustrade boxes.

4. *Trees, shrubs, and flowers are useless "frills," most especially so in these troublous times.* If beauty is a frill, then this is so. But, in a larger sense, isn't it "frills" for which we are fighting? — the frills of personal freedom, individual rights, our homes, our churches, our schools? And isn't the American school *at its best* symbolic of the freedom and the opportunities for everyone that we are so determined to safeguard and preserve? A beautiful schoolyard is no more frill than a well-built school auditorium or a well-equipped gymnasium.

5. *We have no funds for planting the school grounds.* The answer to this lies partly in the answers to Nos. 1 and 2. But this is a project in which the whole school personnel can well participate if board funds are in no way available. The proceeds of a dance, an athletic event, a play, a fair, or PTA cooperation could easily provide the necessary funds. In some schools it has been the custom of senior classes to make their departing gift to the school a tree, or a group planting. This is good — if the gift fits into the whole planting scheme, and if the right of selection remains with someone competent to make it: the nurseryman, or an official or committee advised by him.

6. *We hesitate to plant more than a few trees — students cannot be trusted with more valuable flowering shrubs and perennial flowers. We are afraid of pranksters and vandals. We do not want to be obliged to "police" the schoolyard.* Not far from where the writer lives is a large city park. It is richly planted with ornamental trees and shrubs, and with large beds of flowers. It is policed, to be sure, but only to the normal extent; there is no special flower guard. Adults and youngsters respect these flowers — taxes paid for them, and they come in large numbers throughout the growing season to admire and appreciate.

If I may say so, it seems to me a school that must confess it is turning out young vandals who cannot be trusted with public property had best re-examine its methods and make some radical adjustment. For if its students have acquired no respect for what can be called their own school property, how can they be expected to have that respect for civic and personal property? The schoolyard planting, instead of being avoided, ought to be employed as a moral laboratory and demonstration plot.

Although writing on another aspect of planting and gardening — children's Victory gardens in the home yard — Ellen Eddy Chase presents two points concerning the relationship of the school child and growing things that are worth repeating here. On the staff of the Brooklyn (N. Y.) Botanic Garden, Miss Shaw conducts Saturday morning classes in gardening for school children. Writing in the April, 1942, *Woman's Home Companion*, she dwells on the teaching power of the soil and the plants that grow upon it.

Trees and plants are fastidious. They have definite likes and dislikes. They follow rules. And thus, Miss Shaw points out, if a gardener insists upon going his own way and breaks the rules, "the garden will talk to him right from the shoulder. . . . A good lesson, is it not, with no nagging whatsoever? . . . we must know how to take and follow directions."

Miss Shaw's second point is to make the garden a visual laboratory: "Do not answer all [the child's] questions. Send him to books; teach him to observe."

Except under unusual conditions, the school

(Concluded on page 70)

A War-Training Machine Shop

G. H. Parkes[1]

The new machine shop training unit, known locally as "Unit No. 4" of the Williamsport Technical Institute, was designed and built during the war-training emergency and for war-training purposes. The chief characteristic of this building is its large machine floor, 15,700 square feet of clear space devoted exclusively to shop stations. Another 15,400 square feet on a lower level provides all auxiliary service units for 200 machine stations.

Second Larke Machine Shop. The Williamsport Technical Institute, which is a vocational and technical school of about 1000 training stations serving a population radius of about 20 miles, is a unit of the public school system of Williamsport, Pa. The Institute has been constructing shop units of the factory type since 1931 and now has five large shop units, the largest of which contains 5700 square feet of clear shop space. In addition, the first unit of a large aviation trade school, located at the municipal airport, has been completed.

The present machine shop was designed to replace a smaller shop of about 10,000 square feet which was inadequate for the increased program made necessary by the war-training program.

A typical view of the Williamsport Technical Institute vocational machine shop with a war production group in training.

Plan and Safety Precautions

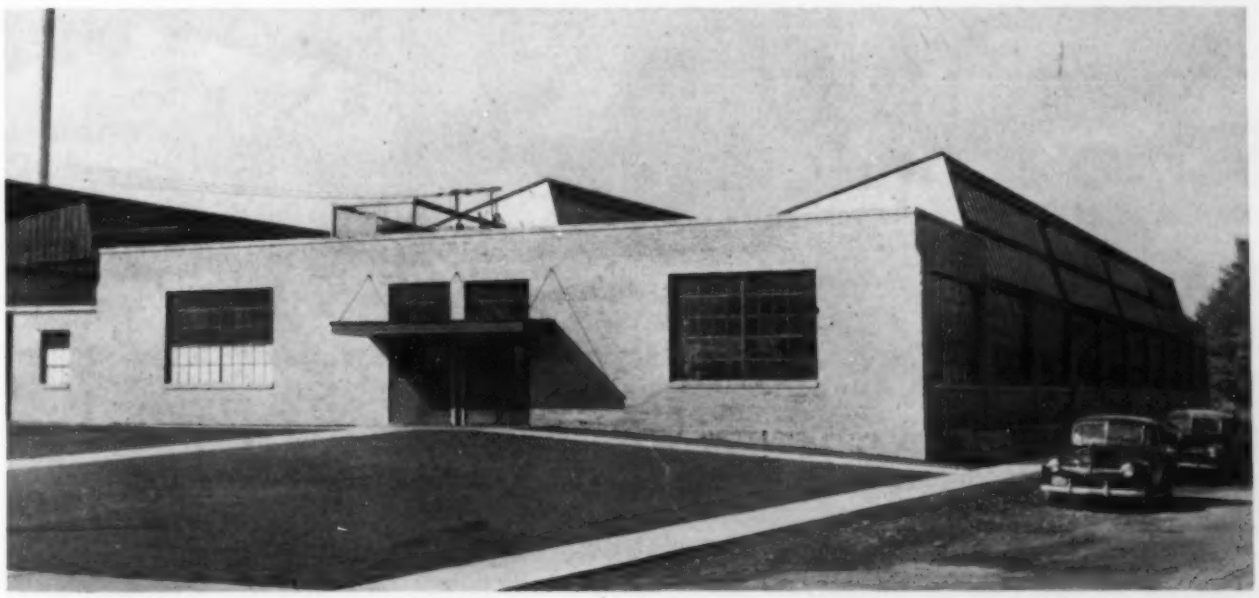
Self-Contained Unit. "Unit 4" is designed to be a self-contained school machine shop training unit based upon a close approximation of a commercial machine shop. It was constructed so that all of the valuable main floor space could be utilized for the basic training stations without the necessity for partitions or service areas. The shop is divided, but not partitioned, into units for the basic machine tools, lathes, milling machines, drill presses, toolmaking, screw machines, and other similar units. Provisions are made for the training of women, although there is some evidence at this writing that certain additional rest-room alterations must be made soon to accommodate the unexpected increase of women trainees. While students of the high school level will use the shop, the design is based entirely on the needs of adult training classes.

Air Raid Precautions. Since about 70 per cent of the wall area is in glass, the problem of blackouts is a serious one. At present, no attempt will be made to carry on training activities on the main machine floor during total blackouts. Provisions have been made in the auxiliary space on the lower floor for blackout and splinter protection while carrying on certain related and visual instruction. In the event of total blackouts, the shop classes move to this secondary area and participate in a prearranged instructional program of a general nature.

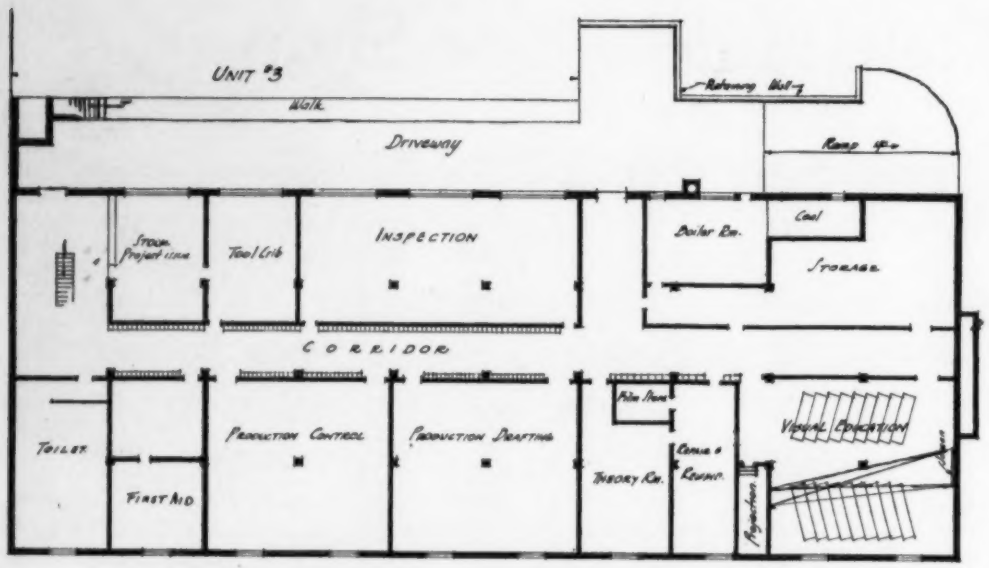
Departmental Arrangement

The Tool Crib. Tools are issued on the ground floor where most of the lockers, toilets, and other service facilities are installed. Per-

[1]Director, Williamsport Technical Institute, Williamsport, Pa.



New Machine Shop Unit, Williamsport Technical Institute, Williamsport, Pennsylvania.



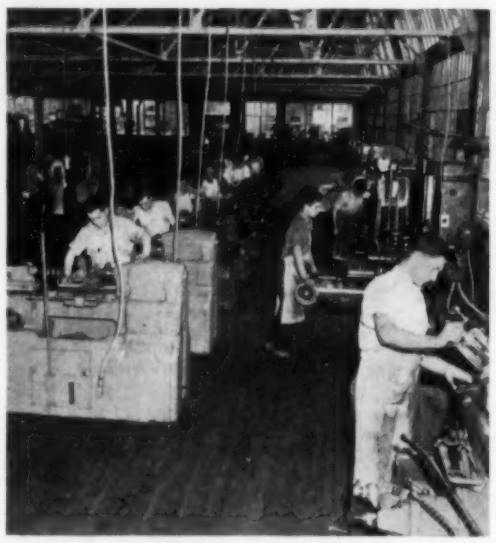
Basement Floor Plan, Unit 4, Williamsport Technical Institute, Williamsport, Pennsylvania.

sonal tools are not provided by the Institute, so that this tool crib does not need to be in the shop itself. Near the toolroom is the project issue room where uncompleted projects are stored between operations. Since the shop is designed for factory type production, the care of materials in process is an important factor.

The Planning and Inspection Department. The shop works on war production as a by-product of its instruction program. The Lycoming Division of the Aviation Manufacturing Corporation, makers of radial and horizontal opposed aircraft engines, is the chief cooperating plant. Since war production is subject to close inspection, every production job taken into the school is planned in a planning department and inspected in a special precision inspection department. These departments also serve as useful training facilities for planning and inspection.

The Gauge Department. The gauge room is a part of the storeroom although it is closely associated with the inspection program. This department is responsible for the care of the hundreds of precision tools and fixtures. A constant check is kept on the accuracy of tools and instruments in this room. Since certain products must be held to a manufacturing tolerance of two tenths on diameters and two micre-inches on finish, those familiar with precision instruments will recognize the need for the gauge room.

The Projection Room. The projection room is an outgrowth of the excellent film instruction material prepared by the United States Office of Education for war training. The new machine shop uses these films as a definite and scheduled unit in machine shop training with the knowledge that certain skills can be taught more efficiently thus than through actual practice. A full time visual education expert is a member of the machine shop staff. As noted above in the paragraph on blackouts, this room serves as a combined air-raid shelter and projection room during blackout periods. A large related theory room near by provides for other related instruction.



This group is in training for war production tool-room service.

Construction and Cost

Construction Data. The building is steel framed with glass and brick curtain walls. The sawtooth roof is skylighted through special monitors, and the roof is 2-inch plank, with built-up roofing. The main floor is of maple over a subfloor with reinforced concrete slab and columns below. The floor slab is designed for 150 pounds per square foot. The ground floor is of concrete. Artificial lighting is of the continuous row fluorescent type with about 50 foot-candles intensity. The power system is of the bus bar type.

The building is heated by a temporary low pressure boiler plant located on the ground floor. When all units of the building program are completed, the heating load will be transferred to a permanent central boiler plant.

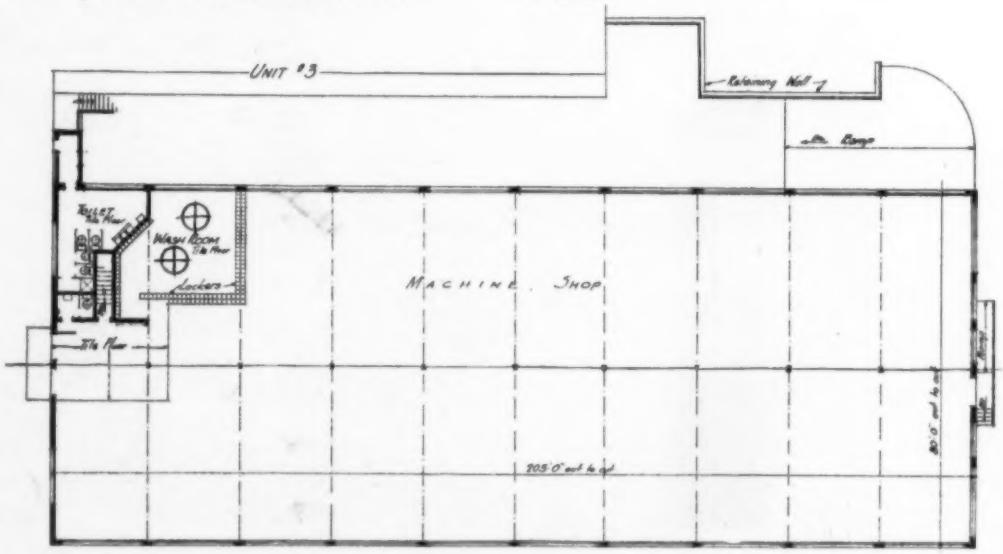
Equipment. The equipment cost is about $300,000, of which about $100,000 is new and modern. The new equipment is chiefly in the toolmaking section.

Financial Data. The building was constructed by the Works Project Administration. In spite of serious labor problems, this agency carried the building to completion with commendable efficiency and speed. The sponsor's contribution was higher than originally contemplated because a considerable percentage of skilled labor had to be employed by the school district.

AMONG BOARDS OF EDUCATION

► The high school board of Des Plaines, Ill., has abolished the so-called students' activities fund, whereby students were permitted to sell books and supplies at a profit. The proceeds were intended to go toward the aid of extra-curricular activities. The board contended that the project was not only loosely managed but had caused an unwarranted competition to the local merchants.

► Wakefield, Mich. Plans have been made for the establishment of warworkers' classes in mining under the supervision of the Michigan College of Mines.



Ground Floor Plan, Unit 4, Williamsport Technical Institute, Williamsport, Pennsylvania.

The High School English Laboratory

Dr. William H. Johnson[1]

Let us visit an experimental English classroom in one of Chicago's high schools and observe some of the newly developed procedures, see the new equipment, and evaluate what is taking place. A group of ninth-grade students are seated around the conference table located in the front of the room. They are engaged in a discussion of the facilities afforded by the numerous libraries in the Chicago area — the Public Library and its branches; the John Crerar, established for the advancement of scientific research; the Ryerson, located in the Art Institute; that of the Chicago Historical Society; and the university libraries of the Chicago area.

Seated in the rear of the room are about a dozen teachers from neighboring high schools, invited to observe the proceedings of the regularly scheduled visiting day. Members of the class other than those participating in the panel have shifted their movable seats to form a V, its vertex pointed toward the front of the room. This seating arrangement, hit upon out of motives of patriotism and loyalty, incidentally makes it possible for every member of the class to see the speakers easily and to bring them and their audience into closer rapport.

The young people taking part in the discussion have gone to great lengths to prepare themselves. Each has visited and investigated in detail the facilities of the institution whose functions he is to describe and discuss as a resource person. The boy who has visited the Public Library has cashed in on the fortuitous circumstance that the sister of the principal of his school is the director of the children's department of that institution. She has spent almost three hours with the youthful investigator, taking him into every nook and corner of each department in turn; she has introduced him to the important people, the men and women who make the organization function. To him, these social contacts probably have proved as valuable as the information and enlightenment obtained. Another student has received a very generous allotment of time and extremely courteous treatment from the director of the highly specialized library of the Field Museum. All have been given cordial receptions. Their problem is how to crowd into the scant few minutes which are each participant's due the vast quantity of important information accumulated.

In a corner toward the rear of the room is a magazine rack containing periodicals and beside it a reference table on which are spread copies of the day's newspapers, a dictionary, an atlas, and a number of other references. At the front of the room, toward the corridor side, stands one of the latest types of recording and play-back machines while toward the window side are located two steel cabinets for filing the written work and reading records of the class members.

After the panel discussion has been terminated, a number of students gather in a queue to await their turns for speaking into the microphone. They are to make brief recordings of their speaking voices. Most of them have selected a joke or funny incident to record. As their turns come, they record their brief selections, each returning quietly to his seat as he finishes. The radio engineer is an Hawaiian boy; his English is not perfect, but he understands the machine better than any other member of the group, and he is improving his English under pressure of a need to express himself. When the job has been completed in an expeditious and orderly manner, the Hawaiian lad proceeds to play back the record. The participants listen with eagerness for their respective voices. Each wants to hear how his contribution sounds in comparison with the others and to decide what he must do to improve his speaking voice. Each has been provided with an evaluation sheet — run off on the room hectograph by a couple of students — bearing a number of criteria to assist him in the process of self-evaluation.

The teacher in charge is not the type traditionally portrayed in the newspaper cartoons and movies. She is attractively dressed and groomed, and is wearing a corsage of orchids presented to her for the occasion by her admiring students. Her ability to inspire confidence in her students becomes evident as she nods encouragingly to a chap who feels a little shaky in his performance.

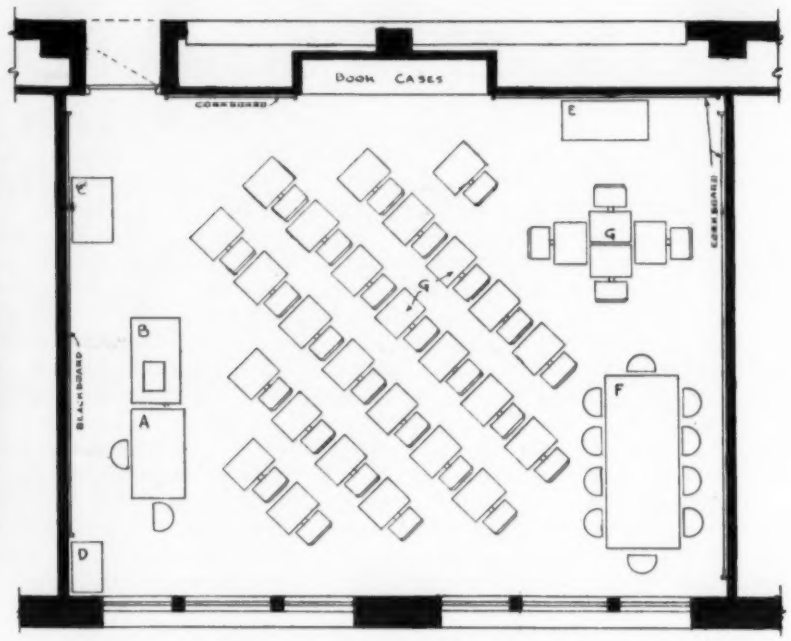
The work under way in this English room has led the writer to conclude that the old order is certainly changing in the English department. Why is this change coming about? The numerous monographs and bulletins published by the National Council of Teachers of English, as well as the regional and national conferences held by this organization, have probably had much to do with it. Furthermore, superintendents and principals have stimulated the development through their frequent expressions of dissatisfaction with traditional English. They have insisted upon the development of a more dynamic type of instruction in the vernacular as to content and method, realizing that the world has changed and that the program of 1890 will not meet the needs of today. It has become necessary to modernize the high school English curriculum. It is imperative that the English classroom become a workshop — an activity room rather than a place where one sits and listens exclusively.

For the past two years 175 of the 816 teachers of English in the Chicago high schools have been at work revising the high school English curriculum with the assistance of an

Study and work projects are carried out in small groups under the supervision of the teacher.

[1]Superintendent of Chicago public schools.

A corner in the English Laboratory of a Chicago high school. Students making and hearing records for the improvement of ordinary speech.



Layout of a Chicago High School English Laboratory. Key: A — Teacher's Desk; B — Recording-Playback Phonograph; C — Book Cabinet; D — File; E — Magazine Rack; F — Conference Table; G — Movable Desks.

executive committee composed of district superintendents, principals, and key teachers. Producing committees have been assigned to plan, for consideration by the executive committee, the units of instruction for the four areas into which the work of the field has been divided — our literary heritage, communication, current English, and certain aspects of general education not properly provided for in the other high school subjects required of all students. The committees applied pressure upon the executive committee, which in turn approached the superintendent, to provide a new type of classroom for the teacher of English and a considerable amount of new equipment. At first their ideas were very fluid, but gradually they became sufficiently definite for presentation to the school architect whose job it became to translate them into a floor plan for the new English laboratory.

The term laboratory does not startle the teacher of physics or chemistry, or the teacher of industrial arts, nor would it seem strange to the teacher of home economics; but to the teacher of English it is revolutionary. It means that the students no longer sit meekly in straight rows in a passive state of body and mind, listening to the teacher. The term connotes activity — round-table and panel discussions, committee meetings, small-group work, supervised study, minor research, dramatization, demonstration managed by teacher and student. Although movement and activity have long been a part of the regular routine of the science laboratory, the teacher of English finds it difficult at first to adjust her thinking and her ideas of classroom management to permit this sort of thing. But once she has experienced the new program and procedure, she adjusts to it very readily.

When one sees the change in atmosphere, enthusiasm, and accomplishment resulting from significant modifications in the content, equipment, and procedure, he wonders why the revolution did not come about long ago. The answer seems to be that the teacher of English has only recently become prepared for it. This is unfortunate, for she could have had much better quarters in the new high school buildings that mushroomed over the country in the decade following World War I had she been ready with her specifications at that time.

When the relatively new subjects such as art, commercial work, home economics, industrial arts, music, physical and health education were first introduced into the high school curriculum, they were regarded as intruders. School officials generally tended to house them in the basement or attic, in a lean-to or improvised building of some kind. The academic and respectable subjects, Latin, mathematics, English, the social studies, and the modern foreign languages, had prior claims on the light, spacious, and cheerful rooms. But as the newer special subjects gained respectability and status, their special supervisors and lay supporters pleaded their cases so well that it became customary to provide in the new high school buildings, appointments well adapted to their special functions. The English teacher's classroom in the new building, however, was generally a replica of the 1890 cubicle.

The reason for this neglect of English was not so much indifference on the part of the superintendent, the board of education, and the public as the lack of imagination on the part of the English teacher, her enslavement to tradition, her failure to advocate a change in purpose, content, and procedure requiring markedly different classrooms. Now that she has recognized the need for reorganization, her demands are going to compel school boards and superintendents to find considerable sums of money within the next few years to rehabilitate her quarters. The English department will probably be pressing for a radio workshop, a small dramatics room, a specialized study hall, a social laboratory, and more frequent use of the auditorium. Since the department received no special attention at the time most of our new high schools were built, it may be necessary to consider a reallocation of space and a physical rehabilitation program.

You know the kind of classroom and equipment she has had traditionally — 30 or 40 anchored seats, arranged in straight rows, a teacher's desk at the front of her room, a picture of Sir Galahad or James Russell Lowell, a set of classics, a set of anthologies, and a set of composition books. There was rarely anything else. And she was frequently not sure of having even this meager room for her own, because it could serve the teacher of mathematics or history equally well. Consequently, teachers of academic subjects were often assigned indiscriminately for the convenience of the schedule maker, to any one of the identical cubicles designed for academic work.

Reference has previously been made to the fact that the high school English laboratory in Chicago was proposed by committees of teachers engaged in the revision of their curriculum. But just how did it evolve? Assigned to the four areas into which the English work was divided, the committees were charged with the preparation of five units for each of the required six semesters of English. As they approached the job of planning in detail the content, activity, and methodology for each of the areas, their needs became apparent. Suggestions regarding the most imperative of these began pouring in to the executive committee in charge of the revision project. First, the committee producing units in the area of communication insisted upon its needs: a conference table and eight chairs, movable seats, recording and play-back apparatus, a lectern,

a mock broadcasting radio outfit if the real thing could not be procured, a wide selection of recordings, and a number of blank records. Second, the literary heritage committee made its wants known: an extensive selection of books for a classroom library, adequate shelving and storage space, tote boxes for carrying the books back to the bookroom periodically in exchange for new collections, cabinets for filing the cumulative reading records, files for the room library catalog cards. Third, came the demands of the producers in the current-English area: a magazine rack, adequate bulletin board space, a table on which newspapers and magazines could be spread to facilitate their reading, duplicating devices for getting out notices about recommended radio programs and movies. And finally, requests were submitted by the committee developing units dealing with certain important aspects of general education for which the English department is now assuming responsibility in the Chicago high school. Fortunately, most of the needs of this group were identical with those of the other committees.

The accompanying floor plan of the new Chicago high school English laboratory shows the layout. The plan is tentative, for the committees still have a year or two of work ahead of them before the new curriculum will be complete. Doubtless further needs will become apparent as the work proceeds, and the specifications for the new equipment may have to be changed as a result of experience. For example, the laboratories are now equipped with 35 movable seats. Although these make possible all sorts of patterns of seating for student groups engaged in various types of activity, some of the teachers are already questioning them. They wonder whether or not about twenty fixed seats supplemented by a dozen tablet-arm chairs, plus a couple of small conference tables seated with bentwood chairs, would not be preferable to the 35 movable seats all of the same type. By way of further example, the cabinets designed for holding the room library may not prove suitable and additional experience with them may cause the teachers to rewrite the cabinet specifications. Each piece of new equipment will surely prove to have certain shortcomings and disadvantages that will become evident only through use. Thus far there has been no great rush to convert a large number of standard English classrooms. But the conversion will be made progressively when a thorough testing period has elapsed, and those concerned are quite sure that they know what they want.

At present there are five of these English laboratories in the Chicago high schools, one centrally located in each of the five high school districts. Their placement was not a matter of chance. They have been strategically placed for several reasons: to sell to the rank and file of the teachers of English the idea that a new type of English room is needed; to train them in the use of the equipment; to interpret the new curriculum and demonstrate its innovations progressively as the new units appear; to create a desire for the new setup among the members of the English department in each of the high schools; and to profit from the fertile suggestions of our outstanding teachers of English.

A new laboratory of this type arouses curiosity; consequently, the principals of all high schools are approached by their interested teachers asking permission to visit the new room. When the laboratories were established, the principals in whose schools they were located published visitation schedules which afford the other nine high schools in the district an opportunity to send two teachers to observe the innovations twice a month. At the close of the visiting day the principal, members of his English staff, the district superintendent, and a member or two of the executive committee generally meet with the visitors for an hour of informal discussion. These visiting days have tended to foster a spirit of cooperation among the English teachers. The questions raised by the visitors and their suggestions have proved stimulating and often challenging to those responsible for the development of new units.

During the coming school year the laboratories will be used for demonstrating to principals and teachers some of the methods of instruction difficult to understand from a mere word exposition or from a casual visit. Some of these methods relate to parliamentary procedure, choric speaking, and the inductive method of teaching grammar. Because of their newness, certain innovations in the English curriculum will receive special attention — the newspaper, the magazine, the radio, the motion picture, the classroom library. Many important contributions to methodology and content will undoubtedly result from this mutual-assistance type of procedure.

There are educators who despair of English; some who have been wondering whether the subject should not be eliminated entirely from the curriculum because it has failed to live up to its promise; some who feel that it can be salvaged only through losing its identity, through integration with other subjects. The writer, however, believes that English has a definite place in the curriculum. The English laboratory with its new approach and its appeal to high school students may well lead to the revitalization of a subject which has in recent years failed to hold the interest and attention essential to reasonable mastery.

Adjustments in School Plant Maintenance, Operation, and Utilization

J. L. Taylor[1]

When the nation is at war, sacrifices and adjustments must be made in practically all aspects of life. We must, however, be sensible and realistic in those adjustments. There is no excuse for becoming so alarmed that we hurriedly do away with basic procedures until we have given constructive thought to substitutions or adaptations. On the other hand, we must not expect to continue life as usual merely because we have been accustomed to certain plans or patterns of action. Both extremes are undesirable and if they are to be avoided, good judgment and clear thinking are essential.

During normal times the schools of the nation have the very great responsibility of providing adequate education for all of its citizens. The welfare of the nation is therefore in the hands of its schools. During a period of war the welfare — even the fate of the nation is in the hands of its leaders, its production forces, and its fighting personnel. All these must be adequately trained in the schools.

New types of training necessitating drastic readjustments in the school program become necessary. Adjustments must be made to meet the war effort needs, however, preparations must also be made for the future lest the postwar era be even more disastrous than the war.

Many schools are studying the situation carefully. Baffling problems are presenting themselves daily. Adjustments must be made in school organization and administration, curriculum, school plant, transportation, teaching personnel, and school finance. To make adjustments in the procedures and administration of an institution so closely related to the very life and safety of the nation, leaders should consider carefully the important factors involved so that proper criteria may be used in determining what can and should be done. Two factors that definitely confront school people now are: (1) What will be the effect on the war effort? In other words, how much of a contribution will be made to the war effort as a result of the adjustment? (2) What will be the effect of the proposed adjustment on the long-time continuing educational program? If it will materially handicap that program, can the adjustment be made in some other way and still make possible an equivalent contribution to the war effort.

Criteria for Planning Adjustments

Among the important criteria which can safely be used for guidance in planning and evaluating adjustments are the following:

[1]The present paper was read before the National Council on Schoolhouse Construction, at Cleveland, Ohio, October 8, 1942. Mr. Taylor is Supervisor of School Plant Service, State Department of Education, Little Rock, Ark.

1. No phase of the educational program should be taken for granted at any time. A systematic study and re-evaluation of the school program in every community should be made.

2. The schools should seek actively and consciously to modify their programs so as to meet educational needs arising from the war. School leaders should recognize that the chief responsibility for determining and planning to meet emergency educational needs rests with them.

3. Due to the necessity of utilizing to the utmost the labor and materials of the nation, the schools should take immediate steps to eliminate all inefficiencies and duplications in order to assure that only such labor and materials as are necessary for the efficient operation of the program will be used.

Adjustments in such phases of the school as organization and administration, curriculum, transportation, teaching personnel, and school finance have very definite implications for those who are responsible for the school plant program. This has always been true, but now that changes are forced upon the administrators suddenly the implications are even more pronounced.

The program of consolidation of smaller school districts into larger administrative units will be curtailed if not stopped completely. The impossibility of buying new buses and the extreme difficulty of getting tires for old buses make transportation of large numbers of pupils impractical if not impossible. Building programs for high school centers must wait. In many instances the old buildings, some of which had been abandoned, will have to be reclaimed. Such buildings must be made safe and as attractive as possible for the duration.

The influx of population in some areas is causing an overcrowded condition in the schools. In some instances this is calling for double sessions and longer school days or improvised classrooms with conditions that may be injurious to health. Maintenance and operation under such conditions will be more difficult, requiring a change in work schedules and a better trained personnel.

The curriculum of high schools is rapidly expanding. The Army, Navy, Marines, and Air Corps are asking for increased emphasis in the fields of science, mathematics, and mechanics. Schools are attempting to meet the challenge by broadening their courses and including new courses in these fields.

Schoolhouses as Community Centers

Physical deficiencies of the draftees and volunteers for military services are causing new emphasis on health and physical education. Most of the men who are turned down because of physical defects have attended public schools. The government wants to know what the schools can do to help remove these handicaps in the tremendous task of raising an army of 10,000,000 men physically fit for combat service.

Besides the expansion of the program for in-school children and young people, the schools are promoting defense classes for out-of-school youth and adults. Many extra community meetings and services pertinent to the war effort are held at the school. This is as it should be. The central location of the buildings and the fact that they belong to the public make them the logical meeting places. The school plant is rightly becoming the "community center."

From this brief analysis of some of the changes that are coming it is evident that increased demands will be made upon the school plant. Since school buildings wear by use, the normal life of the plant will be decreased. The logical conclusion is that a more efficient program of operation and maintenance is imperative or the nation will find its public schools poorly housed in a time when they cannot be rebuilt.

The increased efficiency in maintenance will have to be done with less money and less skilled personnel. That school business administrators understand the situation may be understood from the statements[2] from several cities on the effect of the emergency on maintenance and operation programs.

D. E. McGrath, Pontiac, Mich., said, "No major replacements or modernizations except where materials were bought last year. No remodeling of heating and ventilation systems. Only critical repairs to building exteriors or interiors. Our budget will be cut 50 per cent of that spent last year."

James M. Mahar, Boston, said, "We are eliminating all kinds of permanent improvement which would require the use of critical materials. We only use our priority rating on repairs and alterations requiring critical materials on parts of our equipment beyond economical repair. We are doing some painting. No replacement of floors and nothing of a general improvement nature."

Pittsburgh, Pa.: "This year our contract budget was cut from $270,000 to $61,330 and included the most essential items of repair and replacement."

True vs. False Economies

From these statements and many similar ones it is evident the maintenance and operation budgets are taking a severe slashing. There is cause for alarm in such heavy cuts. During the depression period the schools of the United States practiced economies in some instances past the point of effective saving, and a program of war economies will have to be built on the continuation of this policy of retrenchment still partly in effect.

There are false and true economies, and we should avoid the kinds which reduce effectiveness or produce ultimate loss far beyond the temporary gains.

The adequacy and efficiency of the school plant operation and maintenance program has varied considerably from community to community. In many communities operation and maintenance have been unsatisfactory because of inadequate planning; in other communities funds have been insufficient. As a result even some of the more recent buildings are in a bad state of repair while others have been entirely well maintained and are in good condition.

Since construction or even material alteration of buildings is practically impossible, it is especially important that maintenance be planned on a preventive basis so that problems of wear and tear may be met before they become acute.

The problem of operating and maintaining a school plant is a cooperative one requiring the effort of all the people who use it. Now it is even more important. Children should be taught that they have just as definite responsibilities as the custodian in connection with certain phases of operation. Children can be taught to practice patriotism through an honest effort to help save critical materials.

One of the best ways for school administrators and school plant personnel to prepare to meet wartime problems of school plant operation and maintenance is to make a comprehensive analysis of available suggestions and solutions which can be applied in this period of emergency.

What can school plant forces recommend to administrators and school boards to help save the school plant during this emergency? The following suggestions may prove helpful for saving school plants:

Suggestions for Saving School Plants

1. In line with the criterion that changes and adjustments should not be taken for granted but should be based on facts revealed by sensible research, school administrators should make a detailed survey of the school plant. Such a survey should determine the local needs. Then an intelligent program can be started. For instance, fire hazards may be discovered that can be removed with little expense and without the use of critical materials by checking lighting systems, heating, storage, fire extinguishers, custodial supplies, incinerators, and flues. Fires are caused: they do not just "happen." Arkansas has been losing around thirty buildings by fire each year. This fall a program of inspection of buildings was started in an effort to cut fire losses at least 50 per cent.

2. Efficient custodians can materially increase the normal life of the school plant. One of the most difficult problems school administrators face today is to employ and retain properly trained men and women. In hundreds of instances during recent months members of custodial staffs and maintenance staffs have gone into war work at a marked increase in wages. This means untrained and unskilled workers have been hurriedly recruited for a most important task.

The new recruits must be given in-service training as hurriedly as possible. The administrator in many instances may be obliged to act as instructor. He may have occasion to teach even while the custodian is working at the job. Some superintendents and principals have been known to roll up their sleeves and show the custodians how to perform certain tasks.

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[2]School Business Affairs, August, 1942, p. 6.

The state has a very definite responsibility for helping to train custodial employees. Several states are holding state custodial schools in which three to four days are given in simple demonstrative instruction. Such schools should be on the increase.

3. Work schedules of custodians must be more carefully planned. No one can work efficiently who does not plan his work. Maintenance and operation duties are so numerous it is very difficult to know which to do first. A careful evaluation should be made in making the schedule. The principal of a building should help make the schedules and then discuss them with the faculty.

The changed school program may call for a longer day and thus necessitate night custodial crews in some buildings. Many schools are using bus drivers as part-time custodians. By combining the two jobs, better salaries can be offered to attract a more efficient personnel.

Better Housekeeping as Economy

4. Better housekeeping will prolong the life of school property. Administrators should see to it that teachers, pupils, and patrons help conserve the school plant by improved housekeeping habits. A professional faculty meeting should be held early in the year on the subject of "good housekeeping." A faculty conscious of the need of saving the school plant can inspire the student body to protect school property. Children can easily be led to see that it is patriotic to save now as never before. Likewise adults and out-of-school youth who use the school building must be made conscious of the increased need for protecting the school property. Any act of vandalism upon school property is a disgrace. Windows are broken, doors broken down, and other damages are committed by loafers after school hours and on holidays. Such offenders should be prosecuted to the full extent of the law.

5. Every effort must be taken to practice economy by conserving supplies, equipment, and utilities. School administrators are finding it difficult to secure operating supplies, and the problem is certain to become more acute as the War Production Board continues to restrict certain critical materials. The increased prices of such materials, when they can be obtained, will call for readjustments in maintenance and operation budgets. Again we are reminded of the need of efficient custodians to prevent waste and unnecessary deterioration. All of us have seen cleaning materials wasted and tools abused by neglect and improper storage methods.

Teachers are also guilty of waste by failure to help regulate heat and ventilation properly or by keeping the shades down and using artificial light when sufficient natural light could be had.

Special groups who use the building should be expected to practice economy in the use of utilities and supplies. In fact, if they are not school organizations they should be required to defray any extra expense which they incur. They should leave the building in as good condition as they find it.

Supply Economies Helpful

Many school systems can economize on operation and maintenance budgets by improving their program of administering supplies and materials. The following suggestions should have careful consideration:

a) An objective method should be used in allotting supplies based on the number of pupils, size of the plant, type of equipment, and type of organization.

b) A careful inventory should be made of materials on hand. Intelligent and logical purchasing and distribution cannot be done without such accurate information. An administrator should not be "sold." He should buy supplies and materials. This is especially true during the emergency.

c) Supplies and materials should be bought by specification. This is done by most larger systems. State school plant directors should assist small schools to do likewise. When this method is used, buying should be done by asking for bids.

d) School officials must be thoroughly familiar with governmental regulations and requirements relating to the purchase of supplies and materials. State departments can aid administrators very materially by issuing bulletins that carry the various governmental orders.

e) Orders for supplies and materials must be placed now far in advance of use. It is no longer possible to place all orders in the early summer and expect to have them filled at once.

It is not only good business but sane educational procedure to use the school plant as near the maximum as is practical. It is true that many school buildings do not fit the programs they house. Too often it has been the policy to build a school plant and then force the program to fit it. Such procedures have added to the difficulties of greater utilization. A changing curriculum has made it more difficult to plan a building to fit the program.

Morphet's study of a large number of high schools on utilization of the plant found room utilization to be 75.4 per cent and pupil stations only 41.1 per cent. This seems a logical time for some new research in this field.

Greater utilization would mean a saving in operation and maintenance because a vacant room, for instance, in a high school may already be heated, furnished, and otherwise equipped for occupancy. If such a room can be used instead of improvising another nearby room which may require extra heat and equipment, a considerable saving may be effected.

Increase of Plant Utilization

What can building men recommend to school administrators to help increase the percentage of utilization of the school plant? I propose the following:

1. Schedule makers should give more thought to school plant utilization. Rooms in many high schools remain vacant during a part of the day because little thought is given to this important phase of administration. Such buildings could house more pupils if more efficiently used.

2. Grade schools in congested areas may have to run double sessions to house the children during the emergency.

3. If double sessions are impractical, it is advisable to introduce a program, such as the platoon system, where one class uses the classroom while another section takes physical education in the gymnasium or auditorium work. Such a program would make it possible to house more children and incidentally might enrich the program.

4. Gymnasiums and auditoriums, the most expensive parts of the school plant, often remain vacant a large percentage of the time. Administrators cannot justify such expenditures with such meager use.

The High School Victory Corps program just being inaugurated offers a wonderful opportunity for increased use of gymnasiums and auditoriums. If the program does not call for efficient use of such units, they should be converted into some other units that are needed.

5. Many schools may be able to conserve space by combining library-reading rooms. There may be two divisions that can use the same reading room instead of maintaining two at one-half capacity. Such a procedure probably should be temporary, but it might make possible a few emergency classrooms since libraries are so arranged that they could be partitioned into suitable classrooms.

6. Science laboratories are sometimes so constructed that they do not lend themselves to the use of classes other than science. If science is not taught every period in the day, and in many instances that is true, the rooms must remain vacant a part of the day. Such rooms if needed for other classes should be rearranged. The science rooms proposed by Mr. W. G. Eckles lend themselves to such use.

7. Vocational agriculture buildings have two to three rooms. A great part of the time one of the rooms is vacant. During the emergency the vacant room should be used by another class if needed.

8. The school plant should be used by adult education classes and other community meetings during vacation and after school hours. The buildings belong to the people and should be available for use with certain restrictions as to increased costs and operation.

9. Summer schools for pupils who need to make time to get ready for higher education or military service should be encouraged and promoted in the public school buildings.

Industry employs efficiency experts to study carefully schemes and methods to increase production at reduced costs. The public school administrators might profit by such research in studying scientifically the problem of greater efficient use of the school plant. Such research may not only contribute to the war effort but may save the taxpayers many dollars for years to come after the war and at the same time improve public school housing situations.

General View, Blenman School, Tucson, Arizona. — Henry O. Jaastad, Architect, Tucson, Arizona.

Tucson Builds for the Future

Robert D. Morrow[1]

Last year, before priorities were established and war was declared, the Tucson public schools completed the first group of buildings which were built as a part of a ten-year program. These initial units were built at a cost of $425,000 and represent approximately 20 per cent of the proposed plan. However, an influx of warworkers and the families of soldiers (and sailors, too, now) stationed in this area may make it necessary to expand the program as originally set up.

The two elementary school buildings described in this article are typical of the elementary schools which will be built. A central administrative unit containing offices for principals and supervisors, storage space for books and supplies, nurses' rooms with ample storage space; large janitor closets; teachers' rest rooms; and large, well-equipped kitchens which may be used to serve pupils' lunches or may be used by parent-teacher associations and other groups in the community.

Tucson has (an anticipated) 336 days of sunshine out of a possible 365. In order to use the outdoors and the sunshine which nature has so bountifully given, all of the

[1]Superintendent of Schools, Tucson, Ariz.

The fourth-grade reading class in the Blenman School. The Venetian blinds have been dropped to control the bright sunlight.

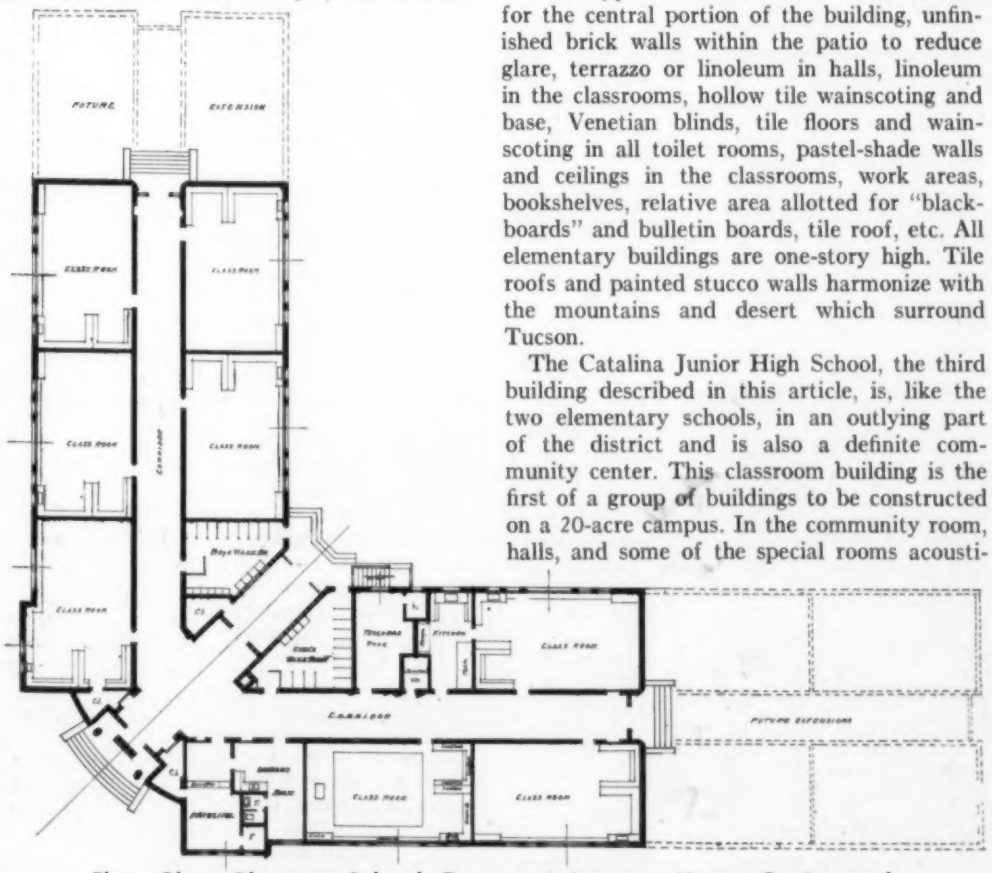
The Catalina Junior High School, Tucson, Arizona. — M. H. Starkweather, Architect, Tucson, Arizona. Complete plans have been made for landscaping this building which was photographed immediately after completion.

newer schools are being built around patios which are arranged to be used for both school and community activities. Outdoor stages and floodlights make these areas "useable" both day and night. The boys and girls themselves will have winter lawns, victory gardens, and flower gardens of their own in the patios. Covered porches and partially enclosed ramadas provide for work and play areas which can be used the year round. The patios may be closed at night when supervision is not available.

The schools are more or less standardized in certain respects but allow enough variation to meet the needs of the immediate community served by the school.

Features which are somewhat standardized are the type of construction — brick stucco for the central portion of the building, unfinished brick walls within the patio to reduce glare, terrazzo or linoleum in halls, linoleum in the classrooms, hollow tile wainscoting and base, Venetian blinds, tile floors and wainscoting in all toilet rooms, pastel-shade walls and ceilings in the classrooms, work areas, bookshelves, relative area allotted for "blackboards" and bulletin boards, tile roof, etc. All elementary buildings are one-story high. Tile roofs and painted stucco walls harmonize with the mountains and desert which surround Tucson.

The Catalina Junior High School, the third building described in this article, is, like the two elementary schools, in an outlying part of the district and is also a definite community center. This classroom building is the first of a group of buildings to be constructed on a 20-acre campus. In the community room, halls, and some of the special rooms acoustical plaster has been used. The nurse's room, community room and outdoor auditorium, and kitchen may be used when the other parts of the building are closed. Only a limited amount of landscaping has been done, but plans have been made for extensive landscaping and development in order that the surrounding community may make full use of all of the school's facilities.



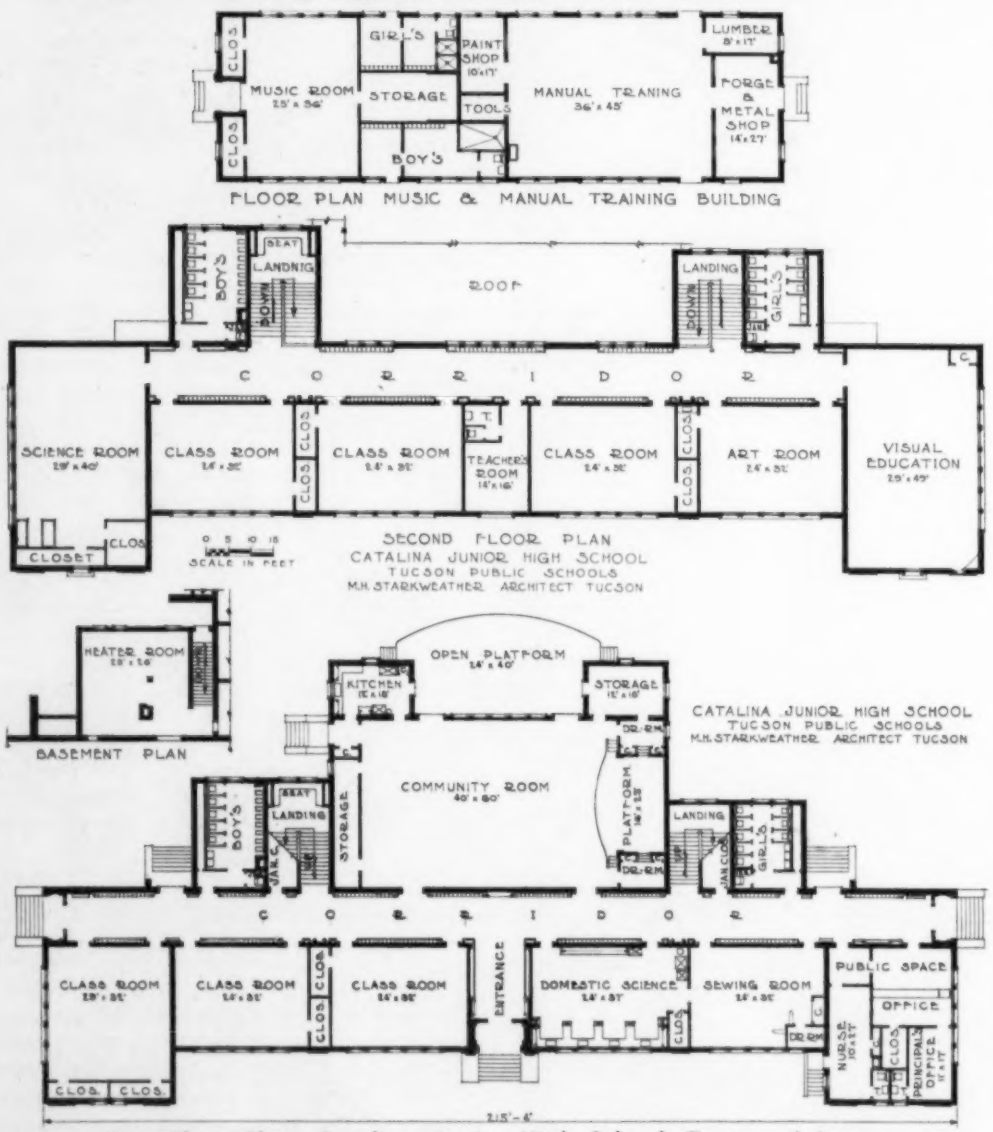
Floor Plan, Blenman School, Tucson, Arizona. — Henry O. Jaastad, Architect, Tucson, Arizona.

In planning these buildings the school board and the superintendent asked teachers, principals, custodians, parents, and in some instances the boys and girls themselves for suggestions. Many of the recommendations made by these different groups were incorporated in the plans.

1. The Blenman School is located in one of the newer subdivisions of Tucson which has all lots sold and 85 per cent filled with attractive homes and gardens. Probably 90 per cent of the people in this district own their own homes, and although the school has been in session for a very short time the whole community is working assiduously for the school. When the war is over, 10 or possibly 12 rooms will be added to the present unit.

The building occupies the northeast corner of a 5-acre plot and will eventually enclose a rather large patio. It has a concrete foundation and brick walls with brick interior partitions; glazed terra-cotta blocks for the wainscoting and base; glass-block side lights on each side of the exterior doors; steel windows and cement floors on steel joists; wood ceiling joists and rafters with asbestos composition roof. The classrooms have lime water plaster on metal lath and ceilings of acoustical plaster; all toilets and washrooms have tile floors and wainscoting. The building is finished in Oregon pine with flush doors with metal trimming. Classrooms have slate blackboards and cork bulletin boards; floors in classrooms and corridors are covered with

The cooking laboratory in the Catalina Junior High School is arranged on an effective unit basis.



First Floor Plan, Catalina Junior High School, Tucson, Arizona.

marbelized battleship linoleum; each classroom has separate lockers and shelf space for each child and sink with running water. The compartments in the washrooms have steel partitions. All electric wiring is in conduit and the building has solid bronze hardware. Interior classrooms are finished in stain and three coats of varnish; all plastered surfaces have oil painted finish in pastel shades — different colors for different rooms. The building is steam heated throughout from a gas-fired boiler in the basement. The steam pipes are graded so as to take care of future extensions without disrupting the present steam system.

Architect — Henry O. Jaastad, Tucson.

Builder — Jay J. Garfield Bldg. Co., Tucson.

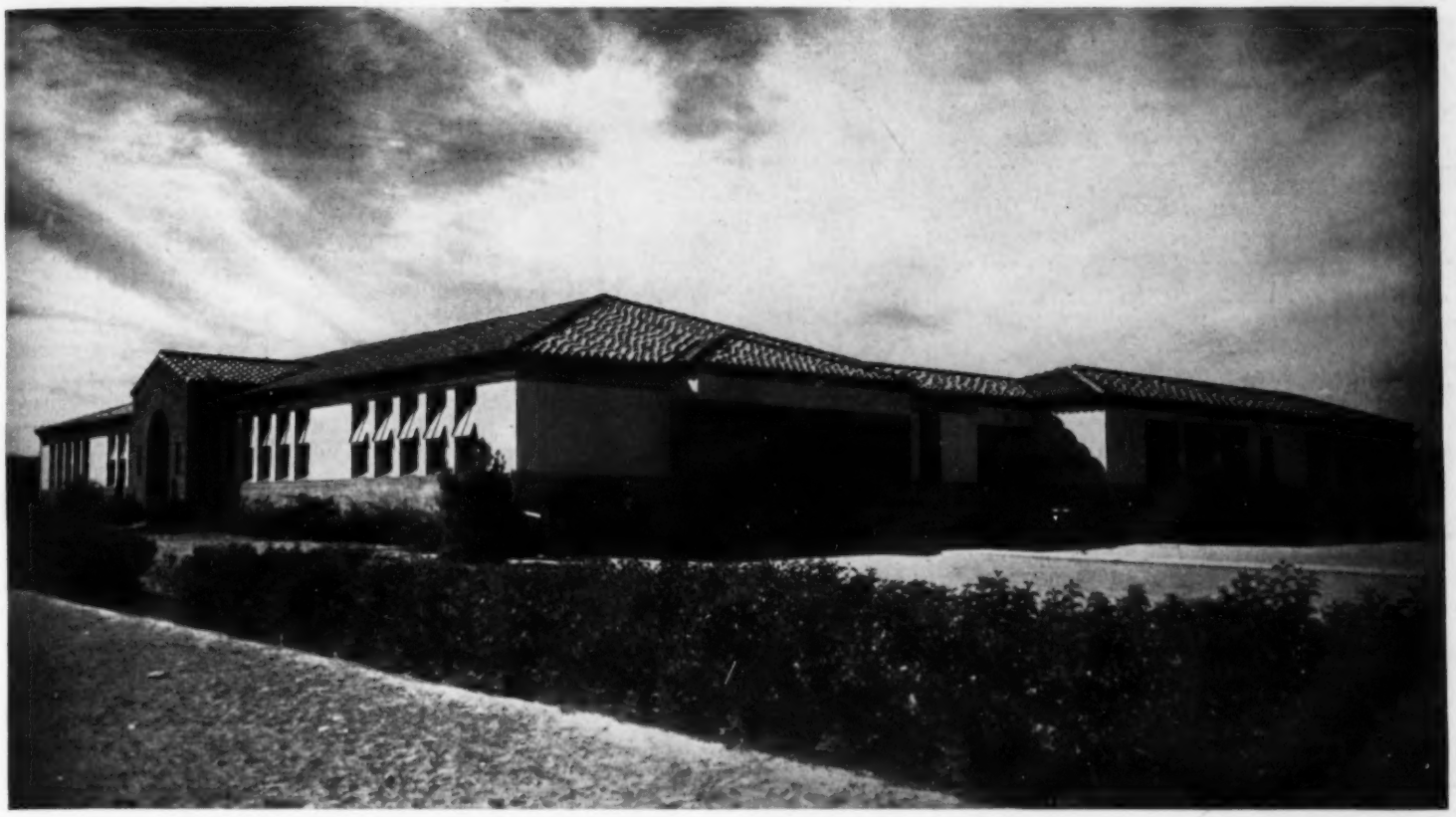
School Principal — A. M. Gustafson.

2. The El Rio School has been built in another rapidly growing subdivision of Tucson. Approximately 95 per cent of the people living in this section are of Spanish-American or Mexican extraction. No attempt is made to segregate Mexican and Anglo-American children in the Tucson schools unless language difficulties are involved, but probably 99 per cent of the children in the El Rio School are of Mexican or Spanish-American paternity. A few Yaqui and Papago Indians and an occasional towhead make up the other 1 per cent. The people in this community own their own homes, too, and although some of them have had a tough time of it during depression years, they are on the whole a fine group of American citizens. Many of the boys and girls helped make the adobes and build the homes in which they live. Ricardo Manzo, principal, and Mrs. Manzo, with the help of the school staff and leaders among the Spanish-American people, have done a great deal for the parents of the El Rio School children. Americanization, nutrition, health, first aid, home nursing classes, and innumerable other community projects have been sponsored by the school. The people in this district are proud of their school and have helped a great deal in landscaping and beautifying the school grounds.

The first unit of this school was built in 1938 and contains six classrooms, boys' and girls' toilet rooms, furnace room, and the principal's office. This unit has an area of 8800 square feet and cost $45,000.

The second unit of this school was completed in March, 1942, and contains six classrooms, a teachers' room, nurse's room, kitchen, storage room, and boiler room. At one end of each classroom in this unit there are a project area and an alcove for coats and hats. Entrance to these rooms is from a covered walk around three sides of a patio. This unit has an area of 75,000 square feet in the building proper. The covered walk has an area of 4000 square feet. This unit cost $62,000.

The construction of each unit is similar. Footings and foundation walls are concrete. Exterior and corridor walls are brick plastered. All floors in corridors and rooms are concrete on steel joists. Floors and wainscots in toilet rooms are tile. All other floors are covered with linoleum. The buildings have tile rooms on wood roof trusses. All ceilings are metal lath and acoustical plaster. All partitions are metal lath and plaster on wood studs. All windows are steel sash glazed with double-strength glass. Windows have Venetian blinds. All trim is pine painted. All electric work is in conduit with standard fixtures. All plumbing fixtures are of the best grade with cast iron soil and copper pipe throughout.



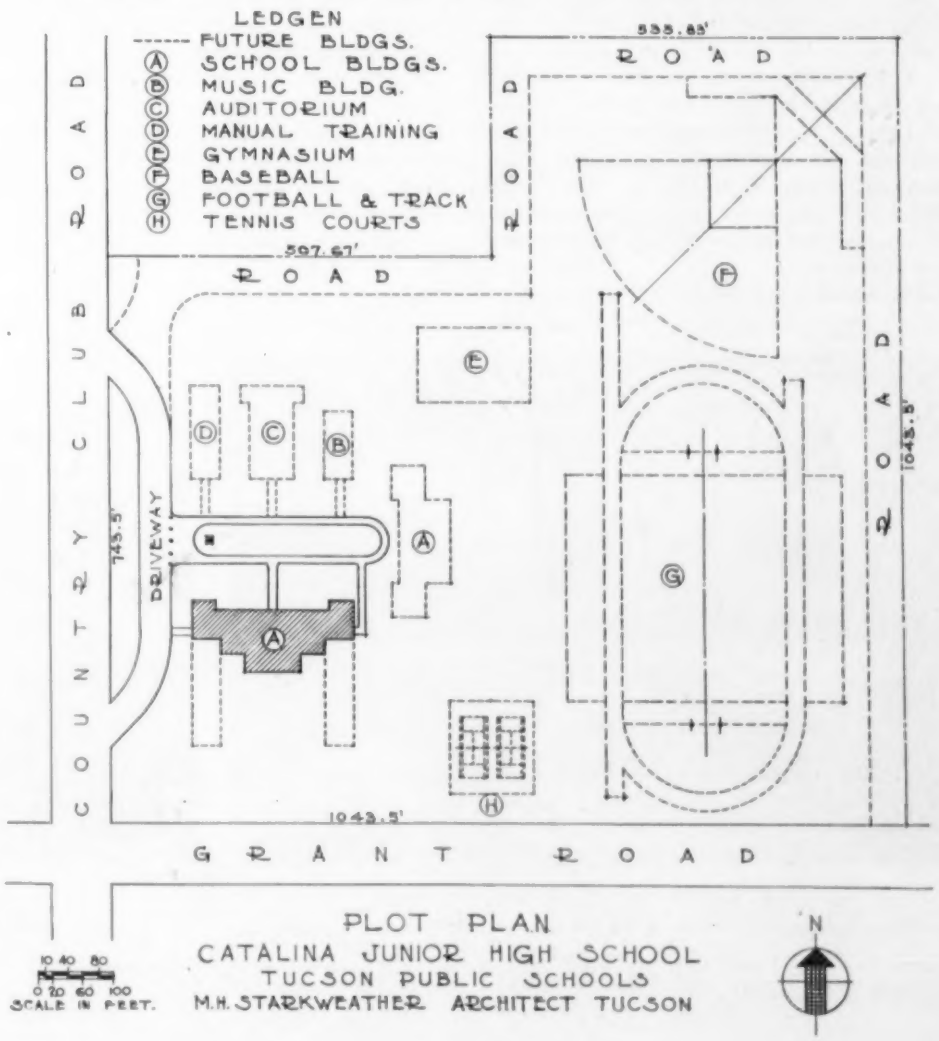
The El Rio School, Tucson, Arizona, is a genuine community center. The grounds have been carefully planted to set a good example for a community of adobe houses. The trees and shrubs surrounding the building have been set out by the parents and pupils. — James Macmillan, Architect, Tucson, Arizona.

Unit 1 is heated by a gas-fired blower furnace with registers in each room; unit 2 has gas-fired boiler with copper tube convectors in each room.

Architect — James Macmillan, Tucson.
Builder — Bailey and McCoy, Tucson.
School Principal — Ricardo Manzo.

3. Catalina Junior High School was planned for a rapidly growing residential neighborhood and should develop into a real community center. It serves a rather large area, and its student body is composed of an equal distribution of both rural and urban pupils. At the present time the school has an enrollment of 300 and is also housing an overflow from the Blenman School. The community room, which is a multiple service room, is in constant use; the large science room with its "growing" tables, the visual education room, the offices and nurse's room, and the classrooms themselves are all light, cheerful rooms. The building faces north toward the beautiful Catalina mountains which are an inspiration to "many an idle dreamer." The building is already used for numerous activities of many adult and family groups and when completed should serve nearly 3000 families in numerous different ways.

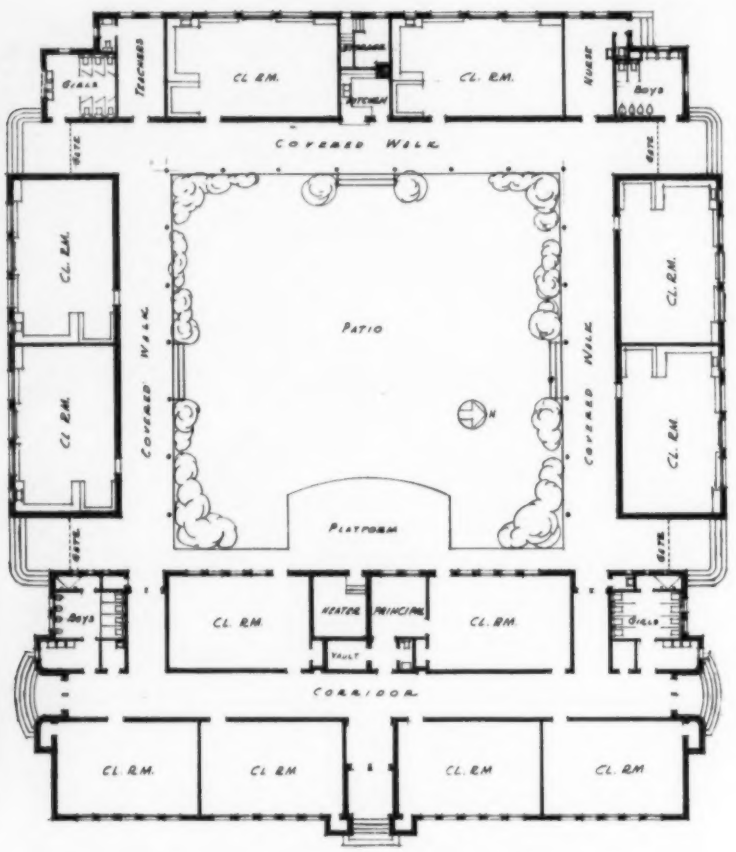
The building has reinforced concrete foundations; reinforced concrete floors, using tile and beam construction with slabs for stairways and landings. It has 13-inch brick walls which are plastered and painted; exterior trim is colored with terra cotta; steel-awning type sash; birch doors and trim throughout; slate blackboards and all corridors of terrazzo. Toilets have tile floors and wainscoting. All classroom floors are covered with linoleum;



PLOT PLAN
CATALINA JUNIOR HIGH SCHOOL
TUCSON PUBLIC SCHOOLS
M.H. STARKWEATHER ARCHITECT TUCSON

Main entrance to the Blenman School.

Typical adobe homes surround the El Rio Elementary School. The residents, who are largely of Mexican birth, raise vegetables and flowers in profusion.



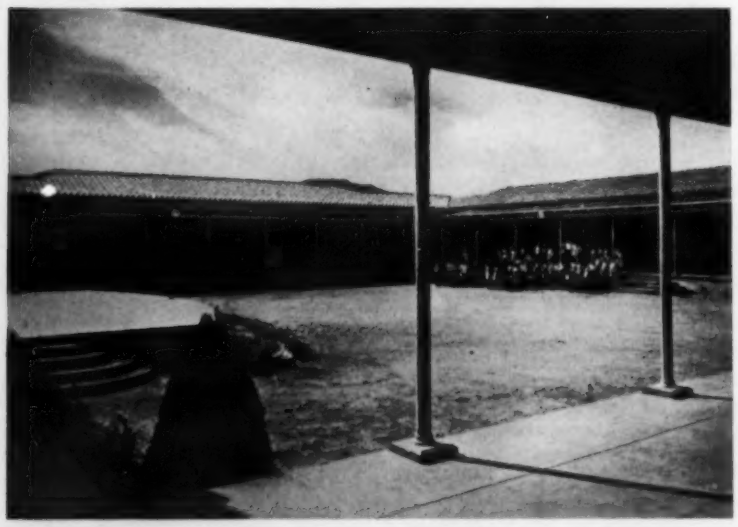
Floor Plan, El Rio Elementary School, Tucson, Arizona. — James Macmillan, Architect, Tucson, Arizona.

all corridor walls and stair halls have 6 ft. 6 in. high terra-cotta tile wainscoting. The roof is of wooden bowstring trusses covered with red clay tiles. All corridor walls are of brick; all intermediate nonbearing walls are wood stud with metal lath and plaster; and all corridor and community room walls are acoustical plaster; all other walls have hardwood plaster. Heating is by steam with convector type radiation.

The domestic science room has built-in tile drain boards with sinks. Corridors are lined with recessed lockers; steel lockers were specified but inability to get steel lockers at time building was completed necessitated using wood. All water lines are of copper; direct lighting throughout. The campus type plan was used for future extensions on a large enough tract of ground to provide for all future expansion. Driveway on school grounds to load and unload pupils, eliminating traffic hazards on main highways. Community room will serve for the present as assembly room, cafeteria, study room, and public meeting hall. To the rear of the community room is an open platform with night lighting facilities for outdoor gatherings.

Architect — M. H. Starkweather.
Builder — Jay J. Garfield Bldg. Co.
School Principal — Fred Kohn.

All these school buildings have some minor bad points as well as their many good points, but each represents a definite step forward toward planning and greater utilization of both "indoors" and "outdoors" in the Tucson schools and will make possible a wider service to the whole community.



The patio of the El Rio Elementary School. At the time the picture was taken second and third graders were "setting out" shrubs under the direction of their teacher.

Front part of first-grade room at Blenman School.. Children asking Miss Marie Dovery to put their clowns and Brownies on the tack-board.

School Bonding Policy

Calvin Grieder, Ph.D.[1]

All the signs point to a great expansion of school bonding in the postwar years, but unless much improvement is effected in bonding practices great losses can be expected in terms of excessive rates of interest, unnecessarily long periods of retirement, and inadequate planning of needs with subsequent recourse to short-term borrowing.

For the present the problems associated with school bonding appear to be more or less academic. The war has, naturally, temporarily put a stop to large-scale capital outlay except in areas immediately affected by defense activities. Even in these situations very great difficulty is being experienced in providing schoolhousing.

The *demand* for schoolhousing to replace obsolete plants and for plant expansion has not, however, been permanently stopped. At the close of the war there will be an immense dammed-up market claiming satisfaction. Building needs gladly shelved for the duration of the war will cry for attention. Obsolete structures will have to be replaced, some expansion of plant will be required in many school districts, and modifications of educational programs will offer still other construction problems.

A public works program sponsored by the federal and state governments will undoubtedly dwarf any program with which we have been acquainted. It is not unlikely that undue haste will characterize many construction projects, with hurried planning and poor understanding of financial aspects.

A total school-building construction need in the amount of approximately $5,250,000,000 existed in 1936, according to a study made by the National Resources Committee. That estimate has been subjected to recent check and is still sound. It represents 65 per cent of the total plant value of public elementary and secondary schools, which is about $8,000,000,000. The Public Works Administration stimulated new construction in the period from September, 1933, to January, 1939 (after which no further allotments were made), to the extent of about $1,000,000,000, which is only a small percentage of the total needs.

In the years 1933–1942 school bond sales and the value of schoolhouse construction were as follows:

School Bond Sales and Contracts*

Year	*Bond Sales*	*Value of Contracts Let*
1933	$ 24,069,399	$ 39,767,000
1934	124,503,890	117,503,200
1935	127,628,693	173,458,700
1936	128,674,772	226,146,900
1937	95,734,879	230,968,500
1938	219,106,410	352,574,000
1939	85,971,792	213,684,000
1940	54,426,187	158,121,000
1941	59,476,053	151,195,000
1942 (5 mos.)	12,225,302	44,190,192

Between 1914 and 1922 the average annual capital outlay was about $117,000,000, or $5.71 per pupil enrolled. In the period 1922–28 the average figure was $372,000,000, or $15.27 per pupil. Thereafter a decided decline set in, with per-pupil outlay of $14.44 in 1930, $8.03 in 1932, and $2.24 in 1934.[2] The PWA program alone stimulated construction at an average annual rate of somewhat more than $150,000,000, or about $6 per pupil. It is plain that with other amounts for capital outlay, the per-pupil average would still be considerably below the 1930 figure given above.

These figures are cited to show that schoolhouse construction is a vast enterprise, and also to show that a very large proportion of it is financed by bonding. The writer admits that the issuance of bonds by local school districts is a poor method by which to finance capital costs. Adequate state building programs, in part financed by federal funds, could obviate this unenlightened procedure. But state action of widespread scope is certainly not to be expected for a long time.

Accepting, then, the proposition that schoolhouse construction is for a long time to come going to be financed largely by the proceeds of bond sales, professional school administrators and boards of education should be prepared to handle financial programs properly. Case studies made in several states, some by the writer or under his direction, demonstrate conclusively that bonding practice is woefully inferior to acceptable standards.[3] Major weaknesses are a general lack of adequate educational planning, general acceptance of legal maximum terms as minimum, little recognition of the advantage or even the existence of the callable feature, poorly constructed retirement schedules, and incomplete bond and interest records. This is not by any means a full list of violations of sound practice.

Between 1920 and 1935 much attention was paid in the literature on school finance to the specialized field of bonding that pertains to schools. Since then little has appeared besides reports of local programs. From the literature of the past two decades the writer has culled authoritative pronouncements which are formulated below into a brief outline of school bonding policy. This is not an exhaustive statement, but it is safe to say that school districts which will follow such a code as is suggested will possess superior bonding programs. Modifications due to local conditions may be countenanced, but, in the main, departures from these principles should be made only after careful study and deliberation show that such deviations are justifiable.

A large number of specialists in bonding, as well as reports of field investigations of current practice, have been consulted. Those principles which are advocated by most of the leaders in school finance and in the general field of municipal bonds are included. Times may change, but in 1943 the following code is a safe guide. Some of the writings found useful in compiling it are listed at the end.

Preliminary Steps in Administering a School Bond Issue

I. *Before the question of bonding is submitted to the voters:*

A. A careful analysis of the educational needs of the school district, both immediate and future, should be made. This should be the product of the joint efforts of the superintendent of schools, his associates, and the board of education, using whatever specialized assistance as may seem called for.

B. A careful estimate of the amount of money needed should be made. This should take into account the possible inclusion of present buildings and equipment for use in the new plant.

C. A study of the ability of the community to finance a proposed program should be made. School district indebtedness is only part of the total public indebtedness to be found in most communities. (Cf. Chatters and Hillhouse, pp. 431–438.)

D. The bonding limit of the school district must be determined, as well as the annual amount of revenue that may be available for debt service. It is unwise to plan for an issue which will utilize the last dollar of a district's legal bonding capacity.

E. Records of board meetings leading to the submission of a bond issue to the voters must be scrupulously kept — as should all official records.

F. The administration should familiarize itself with all the legal technicalities associated with an election on bond issues, and limitations on the district's discretion. Legal controls vary among the several states.

G. When the amount needed has been carefully ascertained, a scheme of retirement should be tentatively drawn up.

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[1]Associate Professor of School Administration, University of Colorado.

*Bruce's *School Market Letter*, compiled from direct reports of school authorities and data furnished by *The Bond Buyer* and Dodge Statistical Service.

[2]Alice Barrows, *The School Building Situation and Needs*, U. S. Office of Education Bulletin 1937, No. 35.

[3]B. Bracewell, *School Bonding in Selected Second Class Districts of Colorado*, M.A. Thesis, University of Colorado, 1942.

C. Grieder, *A Case Study of School Bonding Programs in Iowa*, M.A. Thesis, State University of Iowa, 1936.

J. S. McNutt, *School Bonding Program in Huerfano County, Colorado*, M.Ed. Report, University of Colorado, 1942.

H. K. Newburn, *A Case Study of Bonding Programs in Certain Illinois High Schools*, M.A. Thesis, State University of Iowa, 1931.

1. Serial bonds are not only generally recommended, but in many states are the only type allowed by law.

2. Payment to retire the principal should begin during or at the end of the first year, not deferred. An excuse is frequently offered for deferring payments on the ground that funds are required to equip the new building. This can be avoided by including equipment costs in the bond issue, usually a more economical practice than deferring payments on the principal.

3. The retirement program should be planned to fall within legal limits, and should be as short as is consistent with the financial ability to pay. Many states set a maximum of 20 or 25 years for bond retirement. However, some communities can pay off indebtedness in shorter time. The maximum period allowed by law should not be interpreted as the minimum.

4. Annual debt service should be stepped down gradually, not equalized. By beginning with large payments and gradually decreasing the amounts paid on principal and interest, a margin is built up for new borrowing or for capital outlay from current revenue. Beyond this safety measure there is another consideration. It is probably psychologically sound to assume that people prefer to pay for something new than for something old, hence, they will not object to large initial payments. Large early payments also serve to decrease substantially the cost of interest.

5. Denominations of $500 or $1,000 are most convenient, with a preference shown by investment houses for the latter. Bonds of denominations smaller than $500 are coming into some use to meet the requirements of small investors.

6. The prevailing rate of interest should be ascertained. If it seems unduly high, it may be wise to defer action until more favorable conditions obtain. Some writers hold that certain months, as November, December, February, and July, are preferred because rates are lower, but the financial market changes from month to month and from year to year, so that such statements should not be given blind credence.

7. The projected bonding program should be promoted by means of publicity which will challenge the electorate to regard it favorably. Probably the best type of community effort is one which carries over a rather long period of time, from one to five years. High pressure campaigns are not justified from any point of view. The need for schoolhousing does not mature over night. Accounts of community interest in schoolhouse planning have appeared in a number of periodicals of school administration within the past few years.

8. The administration should inform itself fully about the legal requirements governing the issuance of bonds. Statutory requirements respecting publication of election notices, advertisements, resolutions of the board, holding of elections, wording of the proposition as submitted to the voters, etc., must be strictly observed lest the entire bonding program be invalidated by technical errors. It is well to employ a firm of recognized municipal bond attorneys whose advice in these matters is indispensable. *The Bond Buyer's* annual Directory of Municipal Bond Dealers of the United States[4] contains a list of municipal bond attorneys.

Principles for Administering a School Bond Issue

II. *Upon obtaining the voters' approval of the proposed bond issue, the administration should be governed by the following principles:*

A. The legal authority for the issue must be shown. Opinion of a county attorney is not considered as of sufficient weight in many cases, so that the certification of a firm which specializes in the bond business, as mentioned above, should be obtained.

B. The date of issue of the bonds, to which the dates of principal and interest payments are directly related in most cases, should be coordinated with tax collection dates. Interest and principal payments should be arranged to fall when sufficient funds can be expected to be in the treasury. This practice will make short-term borrowing unnecessary and also prevent the holding of large amounts of idle funds.

C. Bonds should be marketed by public sale. Private arrangements should be eschewed.

D. Sufficient advertising should be done to give notice of the sale of the bonds wide publicity. Many school districts merely fulfill in a perfunctory way the legal requirements for publication and notice of sale. It is well to advertise in the leading financial journals of the state and in one or two national financial journals. Careful preparation of the material to be published is essential. One authority lists no fewer than 18 items which should be included, plus a detailed financial history of the school district or municipality.

E. Alternate bids with and without the callable feature should be taken. While in rare instances the option of calling bonds may not be a wise provision, in general, callable bonds allow for more flexibility in the retirement schedule and protect the school district from paying excessive interest in a period when rates have declined substantially below the rates prevailing at date of issue. If callable bonds are issued, calls should be reported to leading financial journals to guard investors from losing interest on their money through ignorance of the call date. In a period of low interest rates, for example 2 to 3 per cent, insistence upon callable bonds is not so essential as when rates are higher. But many thousands of school districts which issued bonds at 5, 6, or 7 per cent during the 1920's could have made large savings by refunding these issues during the 1930's at rates several points lower.

F. Best bids should be calculated according to methods shown in books on bonding and public finance. If split bids are accepted, or if part of an issue is to be callable and part serial, careful attention should be paid to this matter or the district will suffer loss. Technical advice should be sought on calculating the best bid.

G. Bonds should be prepared and printed by a firm which specializes in this business, with the advice of the bond attorney retained by the school district.

H. A bond and interest record in which to keep a complete record of the issue should be provided for the secretary or other responsible official. This record should provide spaces for entering the following items:

1. Amount of issue.
2. Rate of interest, or rates if split.
3. Purpose of issue.
4. Date of sale.
5. Name and address of purchaser.
6. Denomination.
7. Names and addresses of ultimate holders (often not obtainable but should be provided for).
8. Date when each bond is due and the amount due.
9. Interest dates and amounts due.
10. Record of interest payments on each bond.
11. Payments made on principal.
12. A general ledger for a consolidated account of all issues and retirement plans.

I. Registration of bonds as to principal, or as to principal and interest, is not advisable for small communities because of lack of trained personnel and lack of continuity in records. The advice of expert consultants should be obtained on the matter of registration.

J. School officials should not rely exclusively, as some do, upon investment houses for advice in planning a bond issue. If a district's financial interests are to be safeguarded, the major policies with respect to debt administration should be determined by the board of education, with the assistance of the superintendent of schools if he has technical training in school finance, and a reputable bond attorney. In many cases the advice of bond houses is valuable, but the program should not be dictated by them.

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(Concluded on page 58)

[4]New York, N. Y.

Cafeteria Arrangement and Equipment

Maurice J. Thomas[1]

The growth and development of the cafeteria as a part of the educational program did not come as the result of planning and foresight. It was originally not made a part of the schools' program to serve an educational need but to meet a demand for a type of service that was strictly individual and physical. Early educational innovations, and to a certain extent many of our newer modern practices, were accepted only to meet a specific need and were not originally developed as an integral part of the educational program. Every auxiliary to the narrowly conceived academic program has had to fight for respectability. The school cafeteria has now been accepted by most educators as a real part of the curricular program and has equality with other departments in the school.

The Place of the Cafeteria in the Curriculum

We can no longer think of the cafeteria in a narrow sense. While food preparation and serving are of major importance and must be very efficiently done, we must recognize the real purpose and function of the cafeteria as an educational agency and part of the curricular program. From its early beginning in 1894,[2] a little less than fifty years, it has shown an extraordinary growth and has been generally accepted. This bears out the contention of Dr. Paul R. Mort that it takes close to fifty years for an innovation to be universally accepted by educational leaders.[3] Many of our cafeterias, with the most modern equipment and beautiful quarters, are little better than those of fifty years ago which prepared food and served it in poor and restricted quarters with inefficient equipment. This is due to a failure to tie the cafeteria into the total educational program. The school cafeteria must be closely associated with the activities of the classroom in order to be a real factor in the total development of students.

The Location of the Cafeteria

To accomplish the aims and purpose of the cafeteria in its location in the building and in relation to other departments in the school is of great importance. In the past the cafeteria was usually found in the basement and at considerable distance from the center of pupil traffic. The most common location was under the auditorium and even today in some recent school buildings it has been located in this area. Perhaps the reason is the extent of the space available under the auditorium. Such a combination defeats the purpose of both the cafeteria and the auditorium. The cafeteria needs light and a space that can be developed to meet its own needs and purposes and not restricted by the limitations of another department. The auditorium suffers by being placed above the ground floor, particularly if it is being developed to serve the community as well as the school.

The cafeteria should be placed on the ground or first floor and as near to the center of the building as possible. There should be adequate window space; light should be possible from two sides if no skylights can be provided. If the cafeteria is narrowly conceived as a school service and not as a community agency, its location on the top floor can be justified. Such a location allows for light from above. The best location is in a one-story wing on the first floor which will allow for full development and use. Where land costs are not excessive this should be done. Wide corridors on at least two sides are essential, and adequate entrances and exits are a necessity for handling large numbers of pupils. The departments located close to it should be of the type that will not be greatly disturbed by disturbances of traffic, etc., during three or four lunch periods. The administrative offices, the auditorium, student council, bookrooms, supply rooms, medical center, and guidance laboratory can with justification be located in adjacent suites. Classrooms should be located in other wings and on other floors so as to eliminate as much as possible the disturbances resulting from going to and coming from the cafeteria.

Use of Experts in Planning

In developing an efficient school plant to serve the needs of the pupils and the community, and also to fit the objectives of the school program, the board of education calls in experts and employs architects. Too often the details of cafeteria planning, arrangement, and equipping are left in the hands of these people. They can be of help and their advice should be accepted. However, as well qualified as they may be in their own fields, they are certainly not qualified to make important decisions relating to the selection of cafeteria equipment and its placement. In planning, it is essential that those who will have the responsibility of operating the school — the principal, teachers, and cafeteria manager — the community leaders, cafeteria and restaurant managers in the local community, the board of education, and the architects should all have a part. Final decisions, however, within the limits of finances, should rest with a trained kitchen engineer. He is an expert in his field and has spent many years in study and has had wide experience in such matters. It will be economy to have the final plans checked by several experts in this field. Usually where one person has been in complete charge innumerable errors have been made. The planning, arrangement, and selection of equipment for the cafeteria are among the most complex problems faced in the construction of a school building. These problems, in many instances, have been left to the architect who has had one or two conferences with the principal or the board of education. Every cafeteria installation is different and must follow the needs of the particular school and the plans developed by the architect. Commercial restaurants and cafeteria owners always consult with these experts in kitchen engineering when they modernize and streamline their establishments.

Type and Arrangement of Rooms

The main dining room should be large enough to seat at least a fourth of those desiring service at one time. This is particularly true in large high schools. In general, it will not inconvenience the educational program to have four lunch periods. It is better to provide for seating and serving one third of the student patrons if space and finances permit, as more time can be allowed to each lunch period. Studies have shown that a "lunch hour of 30 to 45 minutes is essential if the children are to enjoy the meal and profit by social contacts."[4] The study further states that, "the short lunch period allowed in some schools is harmful from the health standpoint and inadequate from the social standpoint."[5] A cafeteria that fails to provide for more than food consuming fails to meet the standards of a modern school cafeteria. Six criteria must be used to satisfy educational objectives: (1) sufficient time for pupils to eat without being hurried, (2) dining hall large enough to accommodate those wishing to be served, (3) efficiently planned to expedite entrance and exit, (4) attractive surroundings, (5) a high standard of service, and (6) of major importance, opportunities for developing social and cultural eating habits.

Careful attention must be given to the following facilities and arrangements: Adjacent to or indirectly associated with the cafeteria adequate lavatory and hand washing facilities must be provided; checking space for books and wraps must be arranged so as to avoid congestion and interference with the cafeteria lines; service counters should be arranged so as to eliminate cross traffic between those leaving the lines to go to tables and those entering the service lines; direction rails must be placed in such ways as to facilitate pupils' movements. Floors should not be made of materials that become slippery. The walls and ceiling must be constructed from sound-absorbing materials in order to make the room as quiet as possible in order to serve social and cultural ends.

No cafeteria is adequate that fails to provide small luncheon rooms for groups of varying size. Every student in school should have

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[1]Research Assistant, Teachers College, Columbia University, N. Y.

[2]Ford, W. S., *Some Administrative Problems of the High School Cafeteria.*

[3]Mort, Paul R., *American Schools in Transition.*

[4]Bryan, Mary, *The School Cafeteria*, p. 22.

[5]*Ibid.*, p. 22.

many opportunities to eat with groups of like interest and with their friends. Such experience is in keeping with preparation for adult life and richer living. As has been stated so aptly by Dr. Paul R. Mort, "the school is the vestibule to life."[6]

The large dining room should have a stage located so as to be seen by most pupils in the room. The stage should be utilized by the several departments in the school. Music, dramatics, and other types of entertainment and instruction would then be possible during the noon hour.

Decorations and Finish

In planning the main dining room, attention must be given to attractive display cases, bulletin boards, and murals. As much as possible the display areas should be built in the walls with inset artificial light. Each cafeteria deserves its own distinct decorative features, and spaces for students' creative work should be provided. It will be wise to have a judicious number of mirrors on the walls and columns. There is nothing that will cause young people to react to clean and neat personal appearance as to see how they look. Well-placed mirrors will have a decided effect.

The cafeteria should rival any other part of the building in beauty of decorations and facilities. The lighting must enhance the beauty of the room and not be strictly utilitarian. In planning the unit, the kitchen must be set off in such a way so as to eliminate completely kitchen noises and, so far as possible, cooking odors. After the serving period is over, the room should be available for other uses, particularly the stage and small dining rooms.

Wider Community Use of the Cafeteria

Schools should no longer be planned for pupils' uses exclusively. Every facility of the school must be available for use by the total community. In smaller places this will affect the entire city; however, in a large city the school must be thought of as rendering service to the specific area from which the school draws its pupils. No feature of the school can be more useful than the school cafeteria in this respect. Many adult groups connected with school life and community betterment should have free use of the social and recreational facilities that the entire community has made possible. Banquets, small dinner groups, forums, and organizational meetings should be able to schedule meetings in the school and use its facilities. There is no reason why the cafeteria must be closed at two-thirty in the afternoon. If such a procedure is followed, the people of the community will think of the schools as theirs and not as a remote institution. It will cause better school and community relations. It will again make the public schools public. If the cafeteria is planned to make effective better education for the pupils, it will also be of wider use to the community. There is no reason why several groups cannot use the cafeteria facilities in a single evening. Students will be benefited in two ways: experience in planning and serving and also being financially compensated for their work. The cost of food served should be sufficient to care for all personnel expense of operation.

[6]Mort, Paul R., Statement made in a lecture.

Modern and Excellent Equipment Necessary

Communities construct buildings to last many years, and it is false economy to use poorly constructed or inexpensive equipment for use in such structures. A highly skilled workman will have difficulty doing efficient work with inferior equipment, but he becomes an artisan when given proper tools. The tables and chairs provided for the dining room should be constructed of durable materials exceedingly well made. Specifications must be carefully drawn for all materials and equipment and every item delivered carefully checked to see that standards have been met. The tops of tables should be made of materials that will not crack or break. Stainless steel or monel metal will prove the most satisfactory. Corners should be rounded. The chairs selected must meet the test of durability, attractiveness, lightness, and smoothness. This last requirement will save much grief from complaints of torn stockings.

The length of the counter and the hot and cold openings will depend upon the number of pupils to be served and the types of food that will be available. In a school where there are no restrictions on pupils leaving the grounds during noon hour a smaller and more limited counter will be installed. If such a problem exists it changes the arrangements for items to be served. Such a school will have to meet the competition of small eating establishments and soft drink stores by installing facilities that will enable the school authorities to keep students in the building and patrons of the cafeteria. Each school and community has its own problems, and equipment must be installed accordingly. A double counter is much more desirable and will facilitate service. The serving counter should be constructed of stainless steel or monel metal and its height suited to the pupils attending the school; i.e., elementary, junior high, or high school. A double checking system should be established and one of the excellent machines for checking trays and receiving money should be installed. Only the best should be purchased. Students should be used as operators.

The kitchen should be a model of efficiency for food preparing and completely equipped with labor saving electrical equipment, especially when more than 500 students are to be served during the noon hour. The following equipment is a minimum for the well-equipped school cafeteria: heavy duty commercial range, fat fryer, broiling unit, soup and stock kettles of 40-gallon capacity each with low type of construction to facilitate cleaning, vegetable steamer and kettles of the compartment type with capacity of 6 bushels, a 10-gallon double boiler, bakery tables, bake oven, mixers, dish washing machine with tables for soiled and clean dishes, and portable tables. The extent and number of such equipment will depend upon the number of students to be served during the noon hour. For a cafeteria of 500 pupils it will be essential to have at least one of each type of equipment listed above. Schools planning cafeterias will profit by having a copy of Mary Bryan's book, *The School Cafeteria,* for consultation and discussion with the specialist employed, the "kitchen engineer." Chapter IX and especially pages 265 to 288, will prove especially helpful when planning the kitchen.

The refrigeration plant should be large enough to care for the food that must be kept in stock. Too often this feature is the most unsatisfactory in the whole cafeteria unit. For 200 pupils at least 20 cubic feet should be provided, 400 cubic feet for 1000 pupils, and 600 cubic feet for 3000 pupils. In addition, several smaller units should be available if the cafeteria is a large one.

The equipment in the kitchen should be made of the highest grade materials: stainless steel, chrome plated fittings, and pipes installed throughout. Sufficient ventilation is essential, and it is better to provide too much than to have unsatisfactory conditions. The ceilings should be treated for deadening sound. The walls should be of ceramic tile and the floors of quarry tile.

If over 1000 pupils are to be served, an ice-cream unit should be installed. As has been pointed out, the more pupils served, the more economical it will be to prepare all food served in the cafeteria kitchen.

As a rule two square feet of space should be provided in the kitchen for every person served in the dining room.

Consult a competent kitchen engineer.

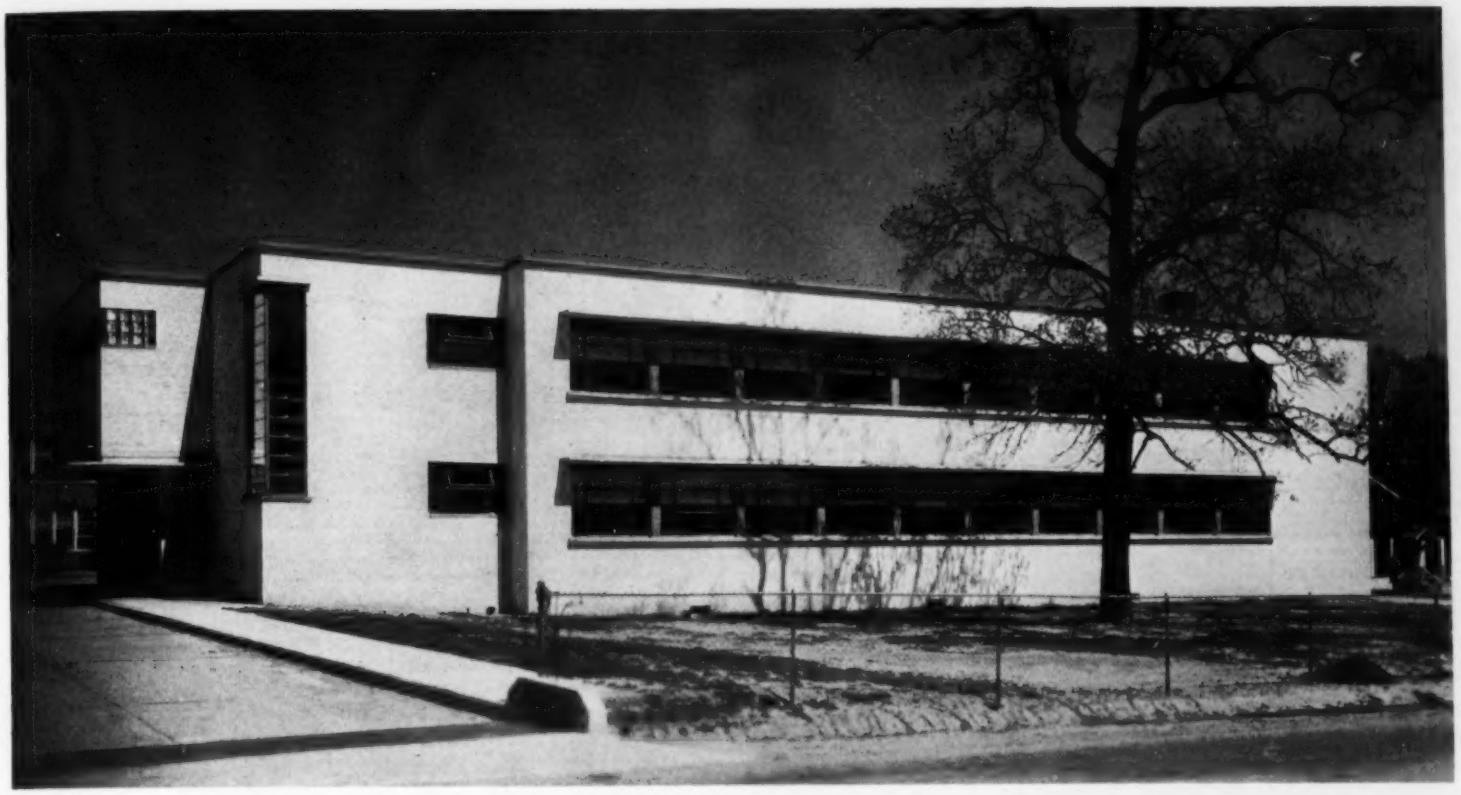
SCHOOL BUILDING COSTS IN MISSOURI

An analysis of the costs of various buildings listed in "School Building Costs in Missouri, 1934–1942," prepared by Dr. N. E. Viles, director of school-building service, Jefferson City, Mo., indicates that many factors are involved in the matter of costs and that no one measure can be applied to all buildings. The location of buildings, types of construction, heights, types of program, and construction cost levels all enter into the local situation.

While most of the masonry buildings of more than two or three rooms, erected during the period, were under one of the federal programs, there were some nonfederal buildings. The figures seemed to indicate that the unit costs under the federal programs were about the same as under nonfederal programs for urban buildings but higher in small town and rural areas under federal programs.

An analysis of cost variations with changes in index measures of construction costs indicated a definite lag between cost index changes and bids made by contractors. Comparisons of cost variations with changes in indices seems to be of value only on buildings contracted at a time when the cost index had been stationary for some time. Even on these buildings, the index measure could serve as an indicator only when used on similar buildings, erected in similar locations, and under comparable conditions.

The analysis seemed to verify a statement, made in a summary issued in 1934, which pointed out that various factors made it difficult to compare school buildings on the basis of any one measure. A composite of several measures for similar buildings, erected under similar conditions, and adjusted to indices of changing price levels, seems to be most reliable.



General Exterior, Haughton High School, Haughton, Louisiana. — Samuel G. Wiener, Architect, Shreveport, Louisiana.

High School Building, Haughton, Louisiana

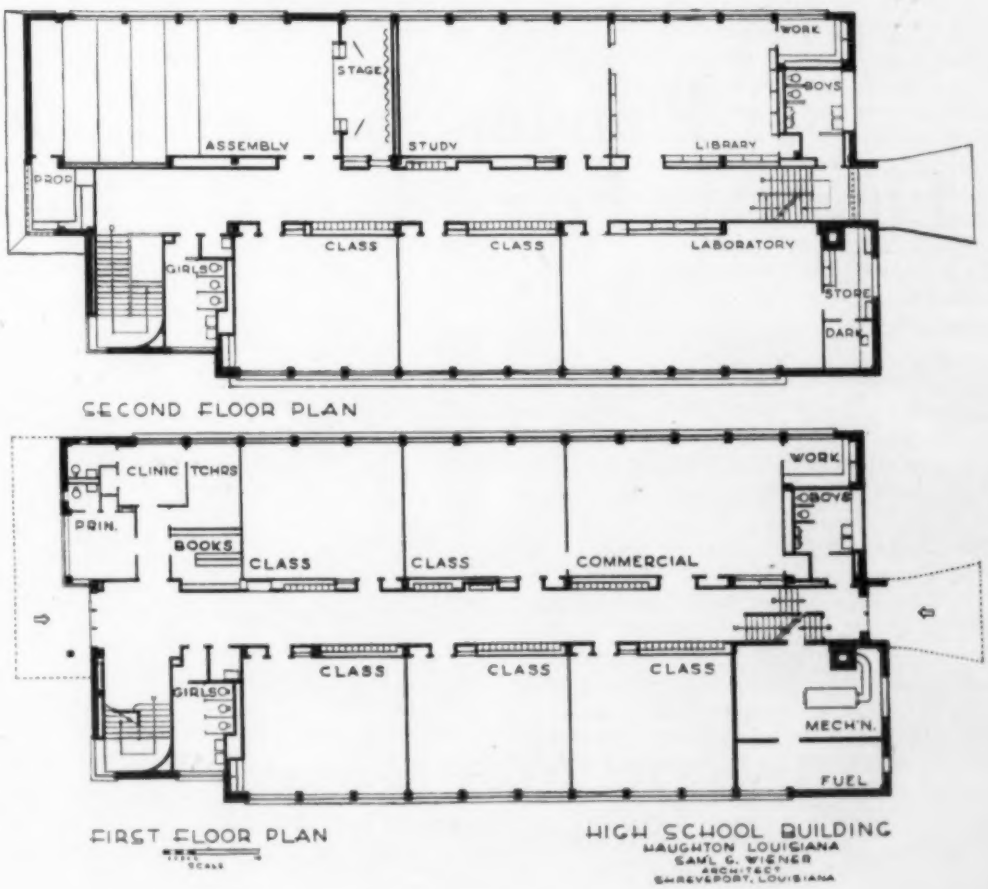
Samuel G. Wiener[1]

This building, erected by the Bossier Parish (county) school board to provide for increased enrollment, serves a rural agricultural population and is located in the small village of Haughton. The existing building had been used as a combined elementary and high school with separate gymnasium and auditorium accommodations.

Under the advice of Mr. R. V. Kerr, superintendent of schools, the board decided to erect a building to serve as a high school and to use the existing building exclusively for the expansion of the elementary school. The auditorium and gymnasium could continue to serve the two schools.

The new high school building is planned for future extension necessitating a minimum of change in the structure. The building is a two-story construction of concrete frame and brick walls. The exterior finish is in the lightest shade of Perla brick with simple trim of light gray Bedford limestone.

The planning is based on a mullion-column system that allows flexibility in the size of rooms and avoids unsightly interior piers or wall spaces along the outside wall. This arrangement also makes possible the utilization of a higher window sill without reducing the natural illumination. The sill height is well above the eye level of the seated pupil and



[1]Architect, Shreveport, La.

The science room is a combined physics, chemistry, and biology room with the front arranged for lectures.

The commercial department has complete equipment.

this adds considerably to the sight comfort.

Reinforced concrete canopies are extended over the heads of the windows on the south side and serve to shade the windows during the school period. They prevent the unpleasant pattern of strong sunlight and shade which is usually a handicap to the pupils seated near the windows. These canopies are similar to the ones used on the Bossier City High School designed by the same architect.[2]

Each classroom is provided with a teacher's closet and a material cabinet. The lockers are placed in the corridors with the fronts flush with the walls. The corridors receive natural light from a glass block window at the east end and a large vertical window in the corner of the main stair hall. The ceilings of the corridors are treated with noise reducing acoustical material.

The administrative rooms are located near the main entrance. The principal's office is provided with a large corner window and is in direct contact with the book-storage room and the clinic. A teachers' room is also included in this group.

The building does not contain a basement, but the floor of the mechanical room is located two feet below the first floor level and contains the boiler, fuel room, and other mechanical equipment.

The assembly room on the second floor is designed to serve a number of purposes. Aside from being used as a general school assembly, it is also used for band practice, dramatics, and for community assemblies. The stage is arranged with access to the corridor so that adjoining classrooms can be used as dressing rooms. The room is acoustically treated to lower the period of reverberation, and the surrounding partitions and doors are insulated against the passage of sound.

The project also included the construction of an athletic field, a sewer disposal system, paved drives, and other groundwork. The entire plant makes possible a rather broad, balanced program of educational services.

[2]SCHOOL BOARD JOURNAL, November, 1941, p. 33.

Planning School Buildings to Eliminate Hazards in the New and the Old

H. W. Schmidt[1]

After reading the above title one might come to the conclusion that the matter of hazards of all kinds has most assuredly been borne in mind by all parties concerned with planning of school buildings and that therefore presenting this subject is only reiterating the obvious. Not at all, to judge by hundreds of building inspections. It will be conceded that there is less to comment upon in this direction in the more modern structures, but even here the situation is by no means flawless. It is interesting to the writer to find comparatively little being done to eliminate even some of the most evident hazards in the older or existing structures. The reason is not always clear though there are some hazards which may call for considerable structural changes, but if a hazard is obvious and a serious one, even expense should not be a deterrent — other things being equal.

To classify the types of hazards encountered is rather difficult due to the overlapping of the various kinds. Fire hazards have two elements: those involving materials and property and, in most instances, those of life and limb. Electrical hazards again involve both these elements. Hazards to life and limb per se and those involving health, again, a priori, involve the material. So in discussing further the subject one must bear in mind this overlap and attach not too much significance to a restrictive terminology.

Dangers in New Buildings

In the modern school structure, even those apparently well planned, we too often find deviations from good safety practice, in spite of a goodly amount of literature upon the whole subject of safety, such as the Uniform Building Code, the publications of the National Board of Fire Underwriters, the National Electric Code, the standards developed by the National Council on Schoolhouse Construction, the material published by the United States and State Health Services and boards, the Society of Heating and Ventilating Engineers, and others too numerous to mention. It is true that these documents do not often mention safety measures per se, but virtually all are written with their effect upon the occupants at firsthand, let us hope, and the disposition of the materials at secondhand. At any rate the various hazards are well covered in these various publications.

One may suspect that in new designs the desire to pay a lot of attention to the educational space and give over the major areas to it, may sometimes lead to a situation where

[1]Wisconsin State Department of Public Instruction, Madison, Wis.

some of the safety factors are not given too much attention. Otherwise insufficient and poorly disposed exits, poorly laid out and located stairs, improper floors, the absence of fire doors, and panic hardware on doors, etc., would not be found. Of course, many hazards may be overcome or minimized by proper disposition of materials, a factor which is fundamental to the whole problem but not evident until the building is completed, and even then not too obvious — this is a matter of expert specification writing.

As a few examples one might mention the character of the gymnasium walls, the types of floors, the absence of handrails on stairs, the strategic disposition of materials to minimize fire hazards, the type of fire protection apparatus and devices, and especially the matter of electric wiring and supply, not to forget the factors connected with sanitation and hygiene — one must consider the health hazards equal to those more obvious, even if the former are more covert. A study of the distribution of accidents as published by a number of agencies should prove of value and be helpful along the lines we are discussing.

But as to the older school buildings, the present seems to be the time to take stock of what we have on hand, how our plants may be modernized (if they are still worth it) and, among other things, how the many hazards found in these structures the country over may be eliminated. During the present slump in construction, we have ample time to investigate and analyze our building inventory and make plans to bring these structures up to date. Unless we are mistaken, the "reconstruction period" is bound to come and no doubt substantial federal aid will be forthcoming; the foresighted will be in a strategic position to profit by it.

Hazards in Older Buildings

But let us look over the list of hazards found galore in the older school buildings and observe how many may be completely removed or reduced without undue expense. Just one word of caution — a forward looking program, a long range one, may call for an early abandonment of some buildings, in which case expensive remodeling may not be proper but simply perpetuating an undesirable feature. On the other hand there is such a thing as "forcing a hand" on the public in order to get a modern building, just as indefensible as the former. So let us be sensible in our efforts.

Among the features needing corrections we may list the following: improperly located and insufficient exits; these may often be corrected without undue expense (see Building Exits Code of the N.F.P.A.). Stairways from upper floors are usually lacking in number and capacity and nearly always constitute serious fire hazards due to their construction; add to this winders, treads too narrow and risers too high, and flimsy construction, and you have a picture which has few redeeming features. These elements seem to offer the greatest difficulty in correction as they often involve complete remodeling of the interior of a school building. In an aside, fire escapes may be provided to relieve the situation, but to the writer this simply admits, very objectively, that the building was poorly designed originally.

We also have the customary fire hazards in old boiler and heater rooms, especially when located in the building itself. Wood ceilings and even walls, improper fuel storage, no firewall separation from the main building, and lack of fire doors are but a few hazards found. Most of them may be corrected or at least minimized without undue expense. Fire extinguishers should be provided commensurate with the areas to be served and the type of construction. Too often they are not properly exposed or are hung so high that they are inaccessible. Whether standpipes or a sprinkling system should be provided in these buildings is a question of relative values and policy. Closets under stairs are fire hazards and may well be closed off. Storage in general should be given similar attention so as to minimize hazards.

Electric wiring in most of the older buildings is a definite hazard, not only due to the type of wiring but also because the modern illumination calls for an overload of the existing wiring capacity, sometimes exceeding 100 per cent or even more. Basement areas are usually bad offenders with metal sockets, openwiring, exposed switches and fuses; and attic spaces are close contenders. Most of these spaces are very poorly lighted and exhibit corresponding hazards in even new buildings where we still find basement areas devoted to various activities, even educational. Last, and not least, the "stage" wiring, open footlights in wood construction, floor plugs in wood, spotlight cords wrapped around nails, etc. A change is almost a necessity and if it were not for present conditions one might suggest immediate reconstruction, but, of course, that is out of the question. And let us not forget modern lighting fixtures — eyesight conservation is an important health factor. Also a specific hazard if not heeded.

Ventilation and Sanitation Problems

While we have mentioned the health factor we had better check up on the ventilation systems. Most old school buildings have either a split system or the completely outmoded and ineffective gravity-indirect type, or even none at all, except window deflectors, usually ineffective. The old wasteful 6 to 10-ft. disk "fan" is still with us, and the steam-engine drive is also in evidence here and there. One hardly needs to emphasize the necessity for a change. Then we can look over the old toilet rooms, not often effectively ventilated; and we often find old "dump" systems, hopper water closet; few, if any, hand washing facilities; bad floors, etc. Water pollution due to improper cross connection of piping, is still to be found and should be corrected immediately.

Again we have hazards in our older industrial-arts shops, often located in poor basement areas or in originally "unassigned spaces," with poor natural and artificial lighting, machinery poorly placed, slippery floors, direct-motor-driven machinery not grounded, moving parts not protected, woodworking shops minus exhausters, and so *ad infinitum*.

This brief article cannot close without calling attention to the necessity of making *a definite* point and *plan of upkeep*. Many structural hazards might have been prevented by bearing this in mind. Good housekeeping is also a vital factor in the whole program, not only is cleanliness involved as a health measure, but eternal vigilance is required to prevent accidents. A few statements gleaned from the writer's experience will illustrate this point.

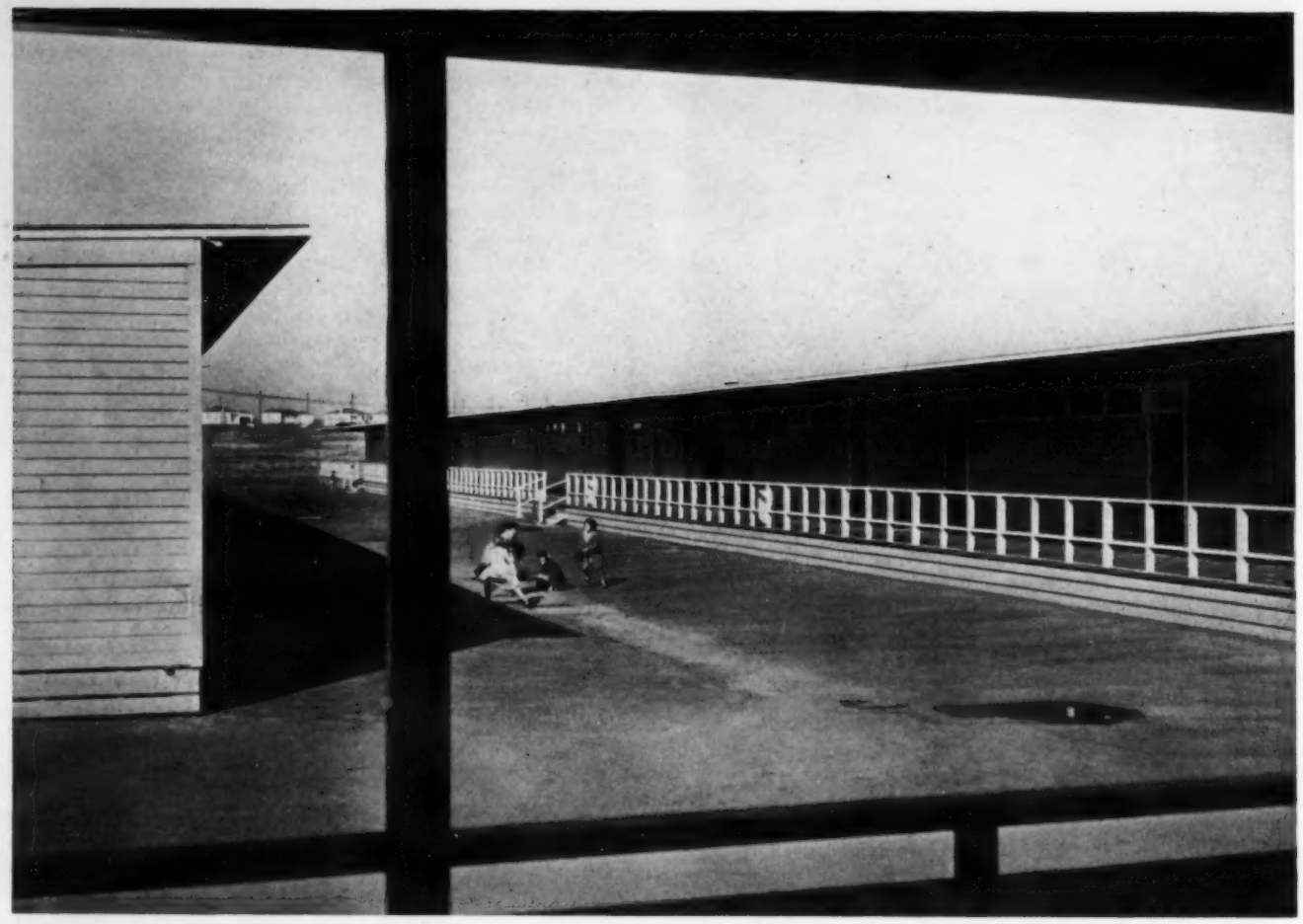
A highly waxed terrazzo floor caused a hip fracture; a defective handrail resulted in a broken leg; a loose coping just missed two children when it fell; a slippery stair nosing gave a youngster a broken jaw; a janitor was nearly electrocuted when he touched a metal electric socket in the boiler pit; a serious fire was narrowly avoided due to failure to replace a fusible link in a fire door; a boy fell from the balcony of a gymnasium due to a defective railing and received serious injuries; improper ice removal from an outside entrance stairs gave rise to a broken arm; a nongrounded saw table gave the student operator an electric shock causing him to fall into the saw — he is now minus an index finger; a defective lighting switch was not replaced; the electric light at the foot of the basement stairs was not lit, and the school board paid $1,900 for injuries resulting from a fall; a defective giant swing was the cause of a triple accident, not fatal, but serious. Then we have the customary statement, "Fire caused by defective wiring."

But why continue? The above record probably has its duplicate in any fair sized school system. So one job which should not be neglected is a periodical inspection of school buildings, both old and new, and care taken to make immediate repairs where required, and this inspection should include the school grounds as well. Not only this, *but someone should be held responsible for this inspection* and report those conditions which need attention. Otherwise, what is anyone's job will be no one's. Such a program should bring results so far as the safety of the school plant is concerned, but we cannot improve the personal reactions and attitudes toward safety conduct purely by providing a safe place. Nothing but educating the children and making them safety conscious can do this — but the physical environment can and does help.

BUILDING NEWS

► **Granada, Colo.** Contracts let for construction of two elementary schools and one high school at war relocation center. Cost of buildings $308,000.

► **Cody, Wyo.** Contracts let for two elementary schools and one high school at war relocation center. Cost of buildings, $376,000. Architect, Engineering Division, Farm Security Administration, Denver, Colo.

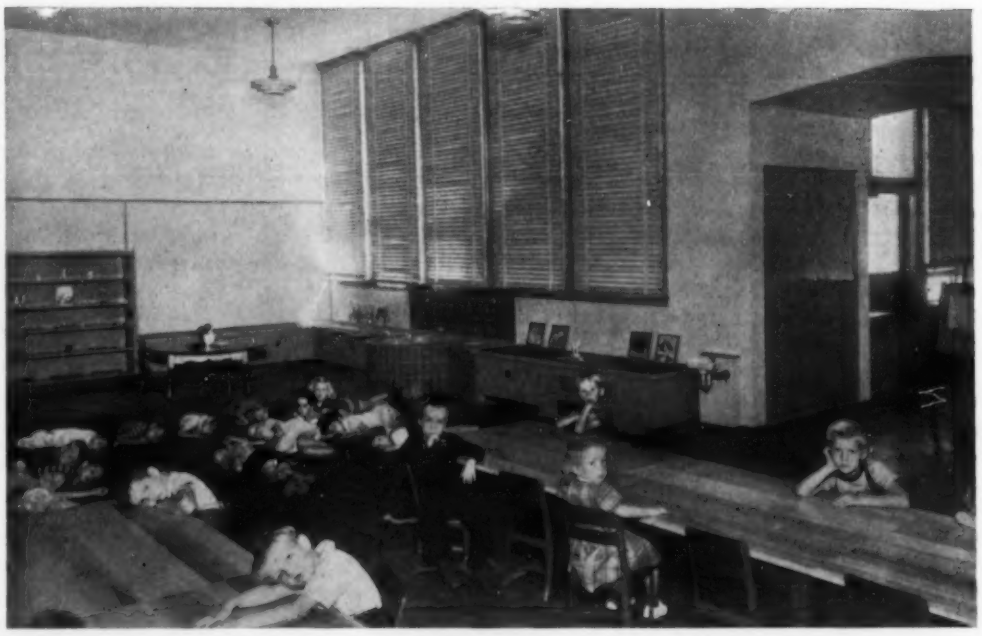


The play court between wings of the Chollas View (Portable Unit) School Building, San Diego, Calif. The classrooms and the administrative unit contain every advantage provided in permanent school buildings.

New Elementary Schools in San Diego

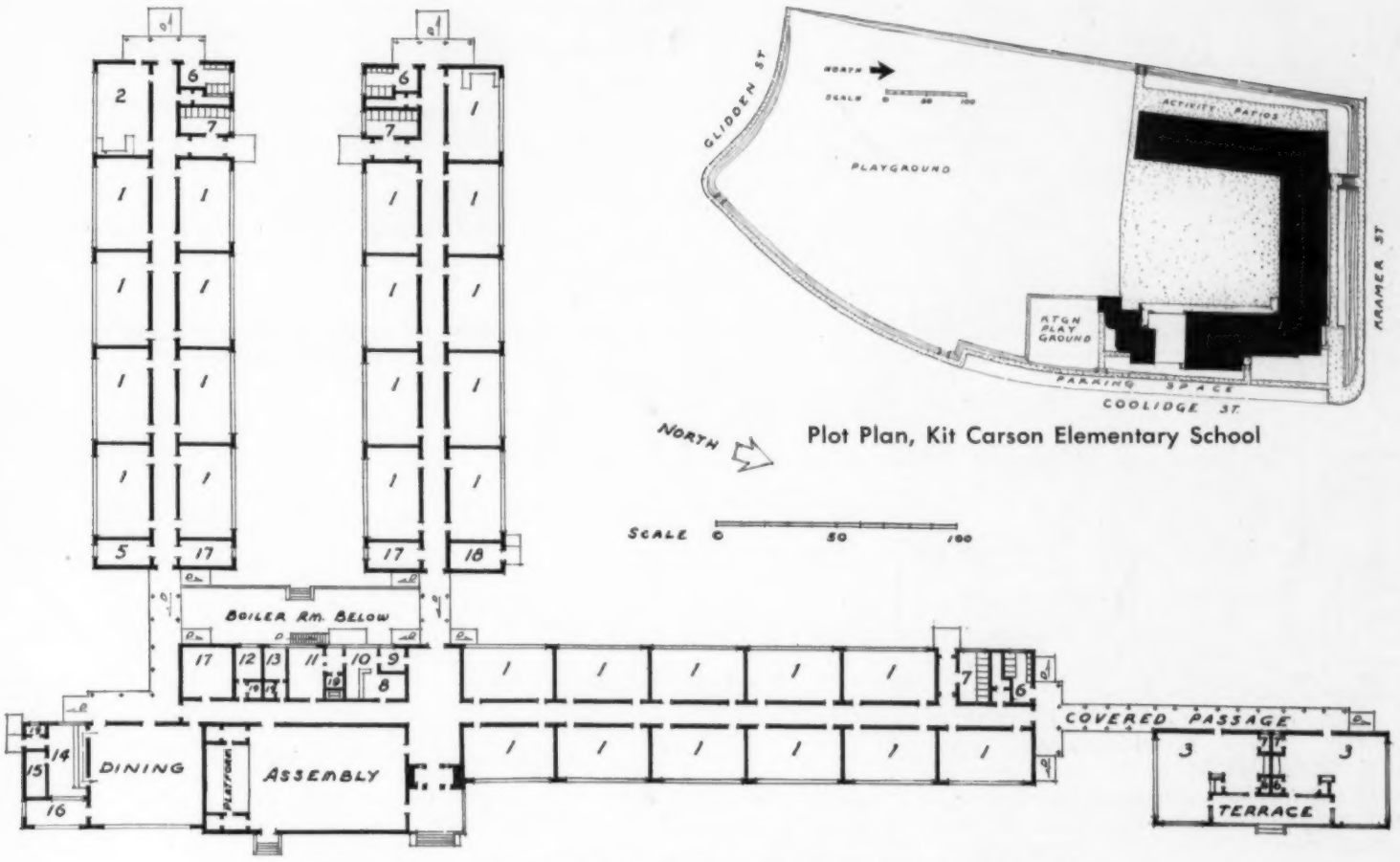
Will C. Crawford[1] and R. C. Dailard[2]

San Diego has been for many years one of the major bases of the Pacific fleet and one of the leading aircraft manufacturing centers of the nation. The defense and war emergency brought tremendous expansion of the installations of the armed services and of the aircraft plants and an unprecedented influx of population to the city. The 1940 population of 203,000, already inflated by the flow of defense workers, increased within a year to well over 300,000 civilian residents and an unknown number of army, marine, and naval personnel. In spite of continuous expansion of school plants to meet a steadily growing population (70,000 in 1920 and 140,000 in 1930), the existing school facilities were completely inadequate to house the expanded school population. A major building program consisting of seven new school centers and 13 additions to existing centers became necessary. Six of the new buildings and 11 of the additions were occupied by the opening of the current semester, and the remaining units are now nearing completion and will be oc-



The typical kindergarten in the San Diego schools allows for the widest variety of study, play, and work activities. A mat is spread on the floor during the rest period.

[1]Superintendent of Schools, San Diego, Calif.
[2]Assistant Superintendent and Business Manager, San Diego, Calif.

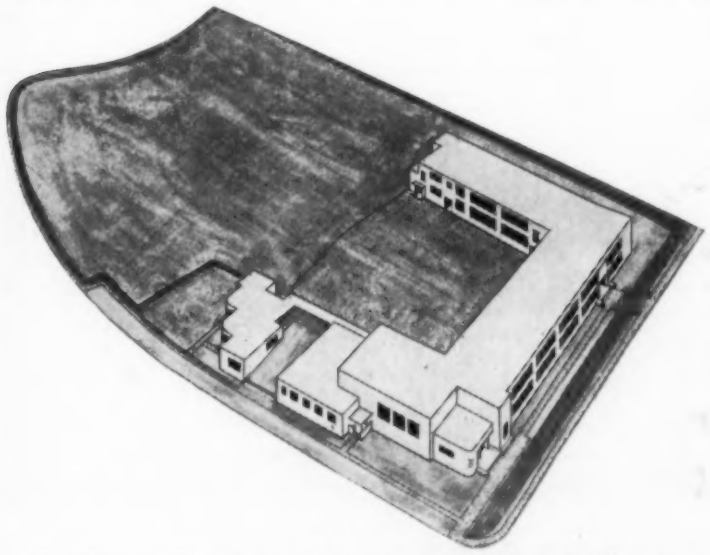


Plot Plan, Kit Carson Elementary School

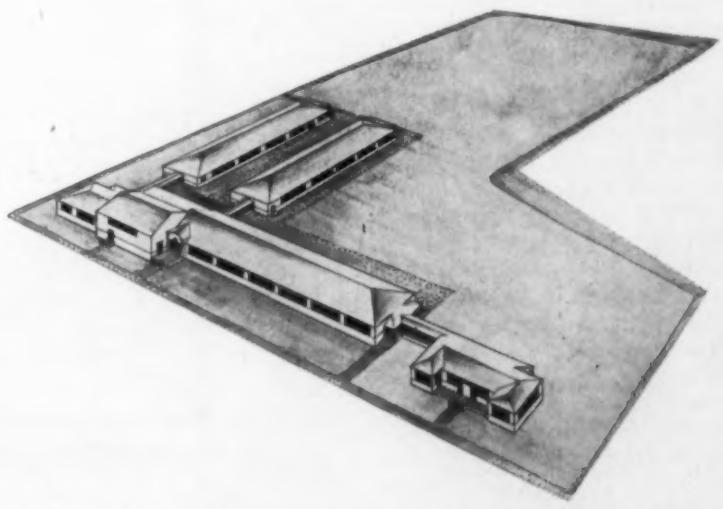
Floor Plan, Linda Vista Elementary School, San Diego, California.

cupied prior to the opening of the February semester. One building was constructed by the F.P.H.A. directly. The 13 additions and one new building were constructed under direction of the Federal Works Agency, and five of the new plants were constructed directly by the Emergency Operating Unit of the Public Buildings Administration. The construction was under direction of W. E. Reynolds, Commissioner of Public Buildings, Public Buildings Administration, and P. L. Hein, engineer adviser in charge of Emergency Operations Unit, Public Buildings Administration. All representatives of these agencies cooperated in every possible way to facilitate construction of the buildings. Federal grants defrayed the costs of the entire expansion program.

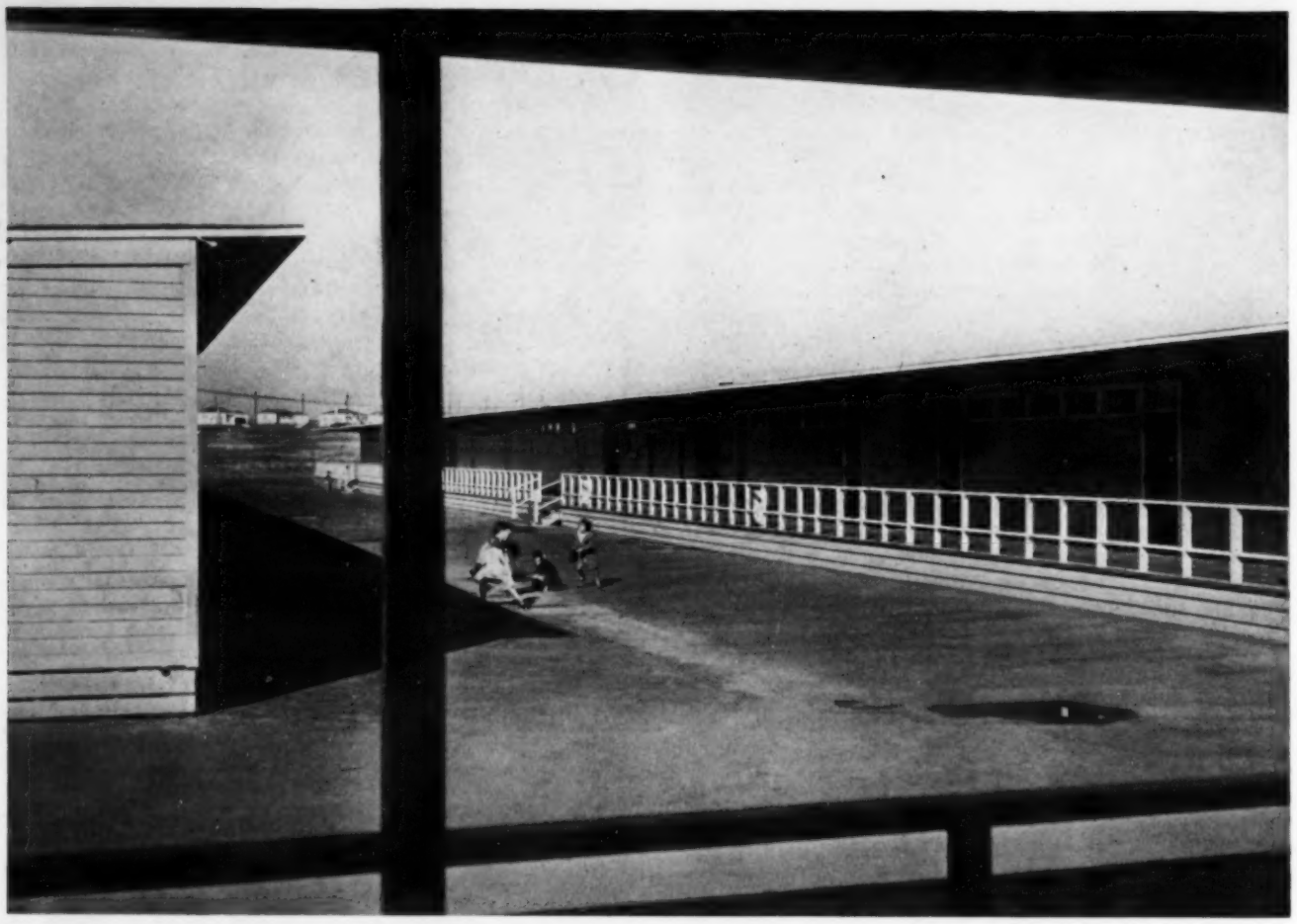
The major need was created by the construction within the city limits of San Diego of five federal housing projects ranging in size from 500 to 3000 family units and totaling 5775 family units. The privately financed housing expansion was largely within the already developed portions of the city, and the school population could be absorbed by expansion of existing school centers. Only one small new building was necessary in areas already districted, but only one of the housing projects could be cared for by the expansion of an existing center. The Bayview Terrace Housing Project of 1000 demountable family units included a 24-classroom school of temporary construction which was completed as a part of the housing construction. In the remaining projects one six-year high school



Kit Carson Elementary School, San Diego, California.
— William P. Lodge, Architect.



Linda Vista Elementary School, San Diego, California.
— William Templeton Johnson, Architect.

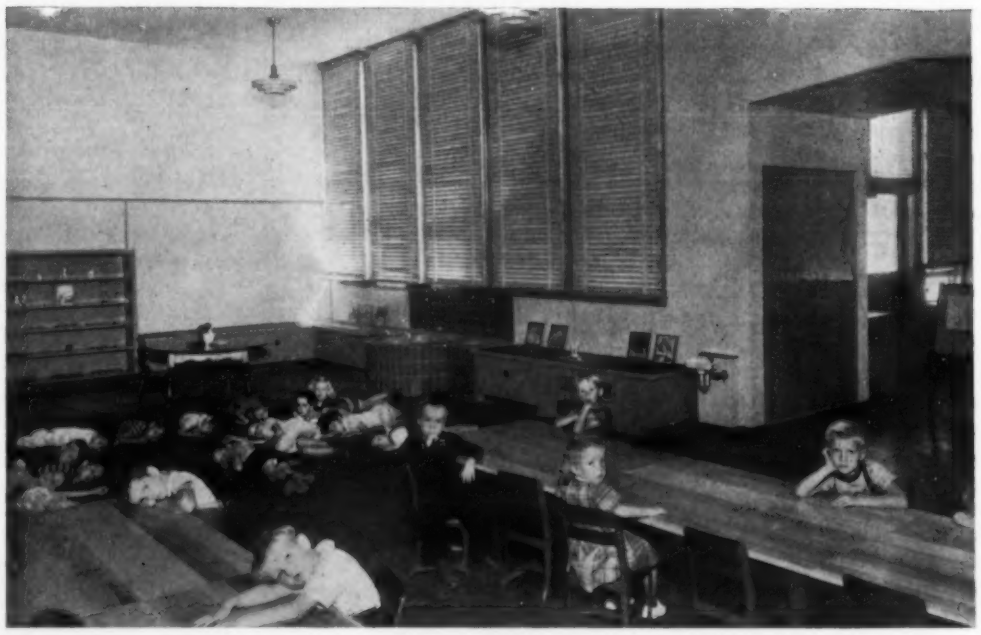


The play court between wings of the Chollas View (Portable Unit) School Building, San Diego, Calif. The classrooms and the administrative unit contain every advantage provided in permanent school buildings.

New Elementary Schools in San Diego

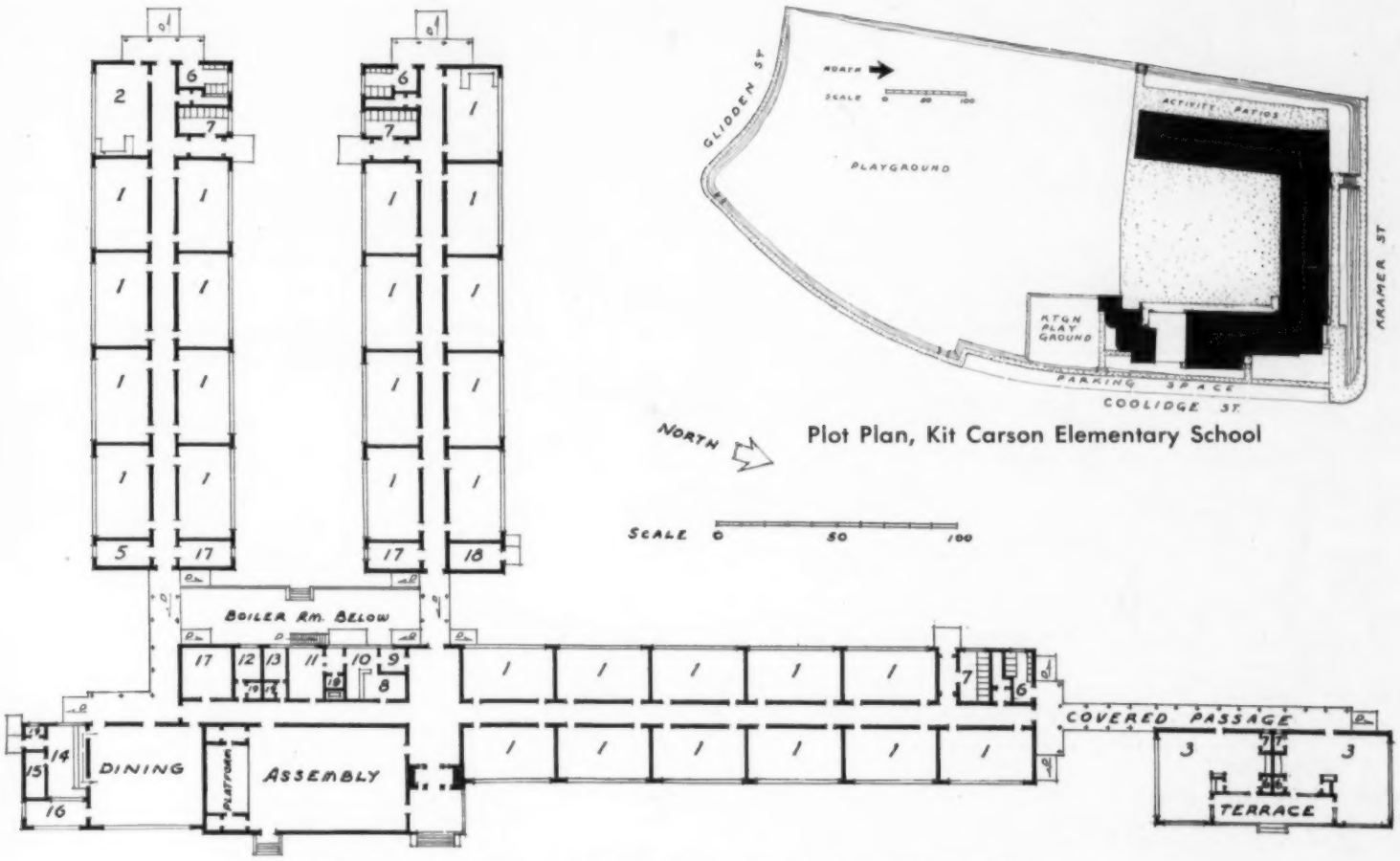
Will C. Crawford[1] and R. C. Dailard[2]

San Diego has been for many years one of the major bases of the Pacific fleet and one of the leading aircraft manufacturing centers of the nation. The defense and war emergency brought tremendous expansion of the installations of the armed services and of the aircraft plants and an unprecedented influx of population to the city. The 1940 population of 203,000, already inflated by the flow of defense workers, increased within a year to well over 300,000 civilian residents and an unknown number of army, marine, and naval personnel. In spite of continuous expansion of school plants to meet a steadily growing population (70,000 in 1920 and 140,000 in 1930), the existing school facilities were completely inadequate to house the expanded school population. A major building program consisting of seven new school centers and 13 additions to existing centers became necessary. Six of the new buildings and 11 of the additions were occupied by the opening of the current semester, and the remaining units are now nearing completion and will be oc-



The typical kindergarten in the San Diego schools allows for the widest variety of study, play, and work activities. A mat is spread on the floor during the rest period.

[1]Superintendent of Schools, San Diego, Calif.
[2]Assistant Superintendent and Business Manager, San Diego, Calif.

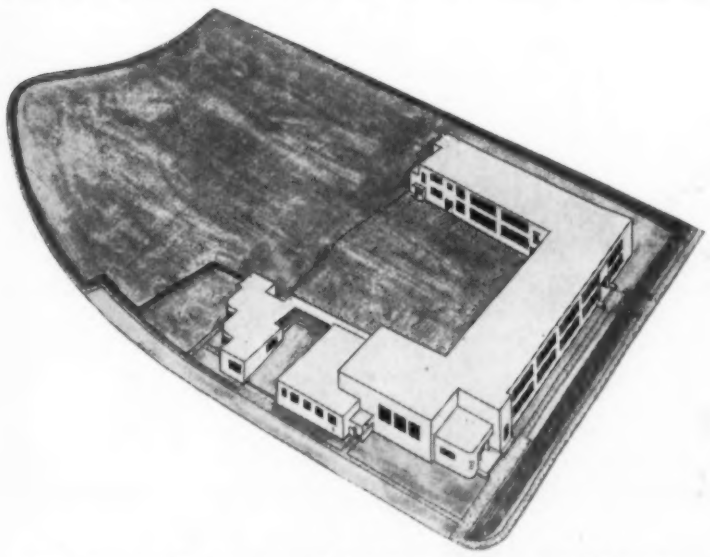


Plot Plan, Kit Carson Elementary School

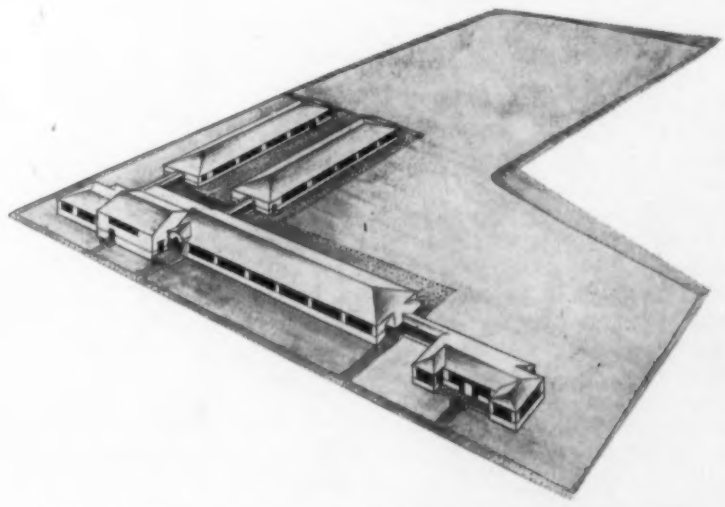
Floor Plan, Linda Vista Elementary School, San Diego, California.

cupied prior to the opening of the February semester. One building was constructed by the F.P.H.A. directly. The 13 additions and one new building were constructed under direction of the Federal Works Agency, and five of the new plants were constructed directly by the Emergency Operating Unit of the Public Buildings Administration. The construction was under direction of W. E. Reynolds, Commissioner of Public Buildings, Public Buildings Administration, and P. L. Hein, engineer adviser in charge of Emergency Operations Unit, Public Buildings Administration. All representatives of these agencies cooperated in every possible way to facilitate construction of the buildings. Federal grants defrayed the costs of the entire expansion program.

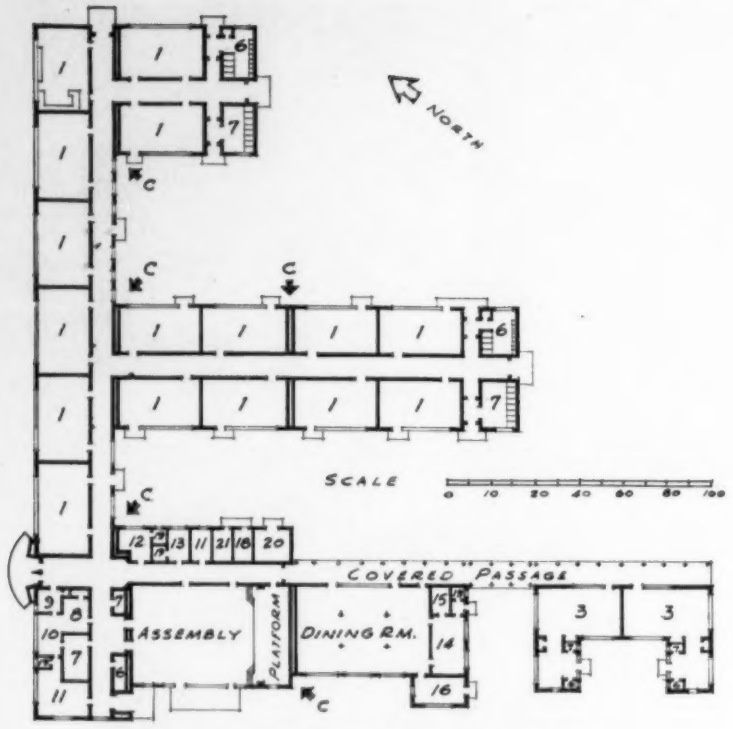
The major need was created by the construction within the city limits of San Diego of five federal housing projects ranging in size from 500 to 3000 family units and totaling 5775 family units. The privately financed housing expansion was largely within the already developed portions of the city, and the school population could be absorbed by expansion of existing school centers. Only one small new building was necessary in areas already districted, but only one of the housing projects could be cared for by the expansion of an existing center. The Bayview Terrace Housing Project of 1000 demountable family units included a 24-classroom school of temporary construction which was completed as a part of the housing construction. In the remaining projects one six-year high school



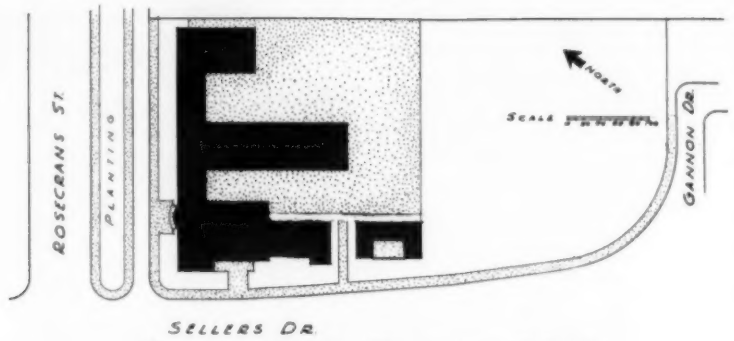
Kit Carson Elementary School, San Diego, California.
— William P. Lodge, Architect.



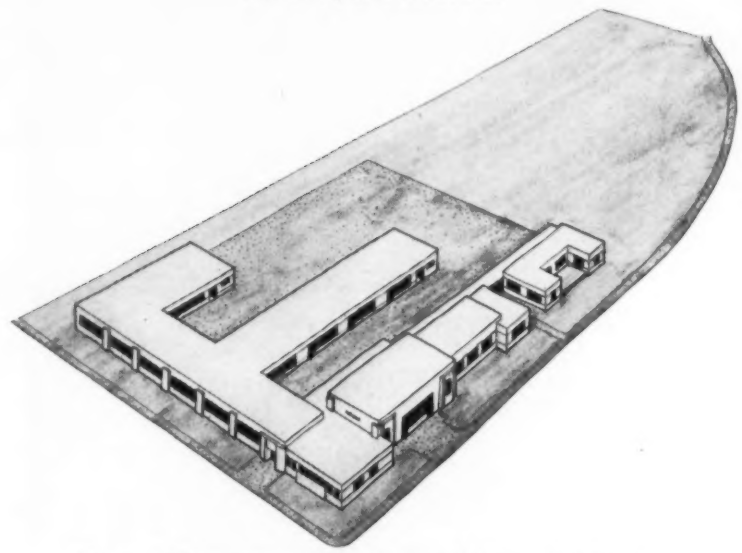
Linda Vista Elementary School, San Diego, California.
— William Templeton Johnson, Architect.



Floor Plan, Dewey Elementary School, San Diego, California.



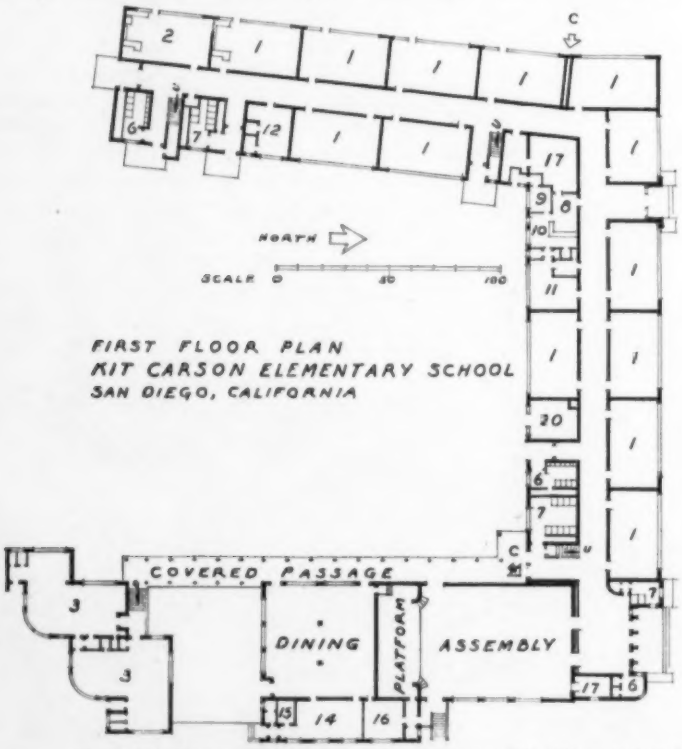
Plot Plan, Dewey Elementary School, San Diego, California.

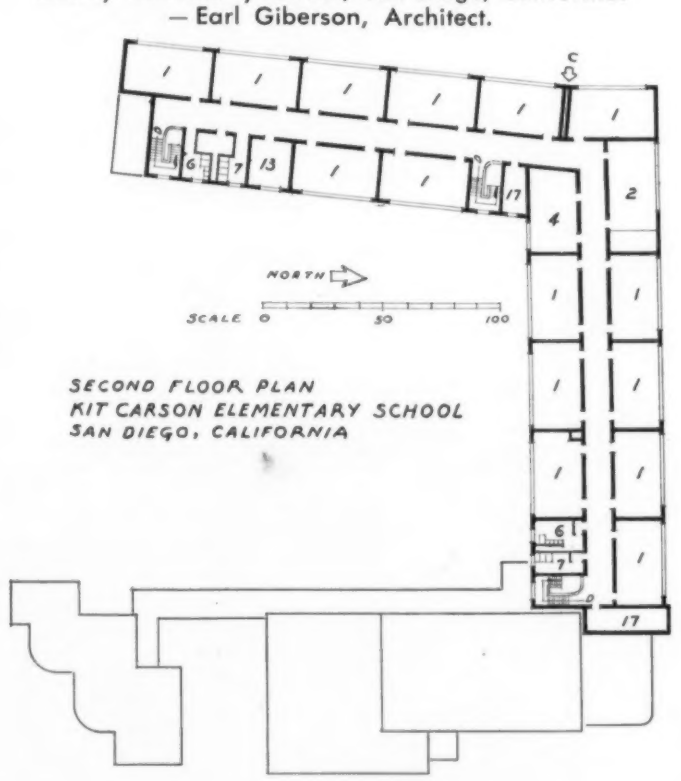


Dewey Elementary School, San Diego, California. — Earl Giberson, Architect.

center and four new elementary school centers were necessary since the housing projects were apart from previously developed areas of the city.

The sites for the three schools necessary in the Linda Vista Housing Project of 3000 family units and the elementary schools necessary at each of the two Naval Housing Projects were set aside by the



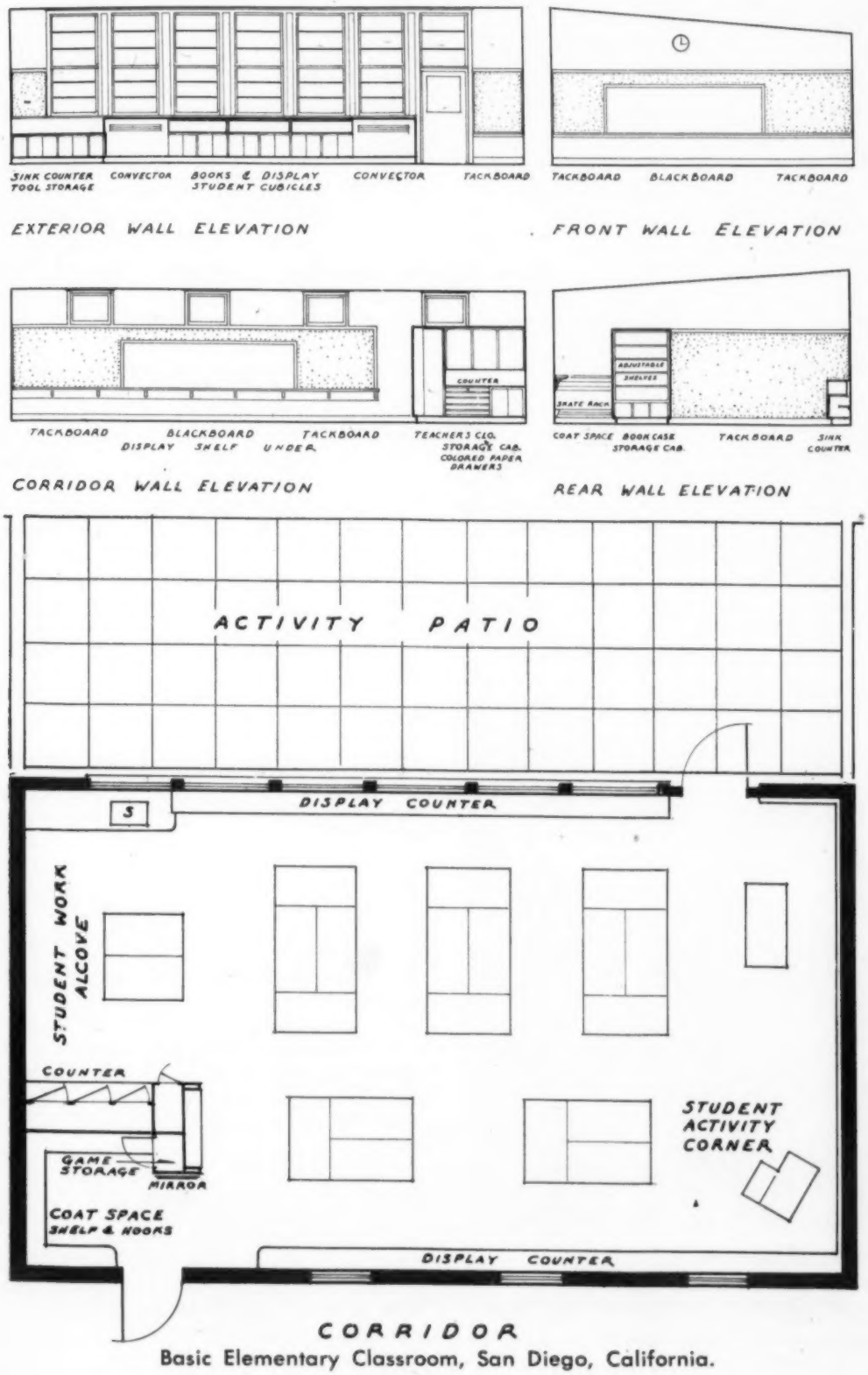


Typical Room Schedule, San Diego (California) Schools.

1 Typical Classroom
2 Special Classroom
3 Kindergarten
4 Visual Education Room
5 Conference Room
6 Boys' Toilet Room
7 Girls' Toilet Room
8 Public Waiting Room
9 Principal's Office
10 Secretary's Office
11 Nurse's Office and Health Room
12 Teachers' (Women) Rest Room
13 Teachers' (Men) Rest Room
14 Kitchen
15 Food Storage
16 Teachers' Dining Room
17 Storage Room
18 Gardener's Room
19 Toilet Room
20 Boiler Room
21 Transformer Room
C Construction Joint

federal authorities at the time of developing the major project site plans. With one exception the sites were well located with reference to the location of the homes, but otherwise had few of the characteristics of good school sites. Each was too small for the school needed. The three Linda Vista sites were on irregular terrains which made major grading work necessary. The two sites at the Naval Housing Projects were on reclaimed fill land with a deep underlying stratum of muck of dangerously low bearing quality. The design of each building required major attention to site adaptation which seriously complicated the task of obtaining an adequate functional plan. In each case, however, the engineering problems were met in such a way that satisfactory spaces for teaching were provided.

All construction was designed by San Diego architects with educational direction by Will C. Crawford, superintendent of schools; R. C. Dailard, assistant superintendent of schools and business manager; and Clyde Hufbauer, architect of the school district.



Basic Elementary Classroom, San Diego, California.

Kindergarten room in the Kit Carson School.

Uniform Characteristics of Elementary Schools

The basic elementary classrooms in all schools have inside dimensions of 23 by 40 ft. with kindergarten rooms using approximately one and one-half times the basic classroom space. Asphalt tile floors are typical in corridors and classrooms of all buildings, with maple in a few rooms and terrazzo in toilet rooms. Ceilings in all rooms, except those in toilets, kitchens, and service spaces, are of acoustical plaster. Corridor and classroom walls are of lightly colored interior stucco with light sand finish, toilet room walls are of tile. Toilets typically have playground exits to facilitate traffic flow and to make them available for recreational use of the playgrounds in out-of-school hours. Double-hung sash windows, Venetian blinds, indirect classroom illumination, and slanted classroom ceilings are uniformly used in all five schools. Forced hot-water heating plants with oil-fired boilers are used in all but the widely spread Farragut School building in which unit heaters are installed.

All classrooms have running water with sink and sink table of proper height for the grades using the room. Exterior classroom doors with outdoor activity patios were provided wherever possible. The basic elements of the typical classroom plan (see plan and photograph) were used, although arrangements and details were varied according to internal relationships, orientation, and grade placement. The basic classroom plan is in no way "standard."

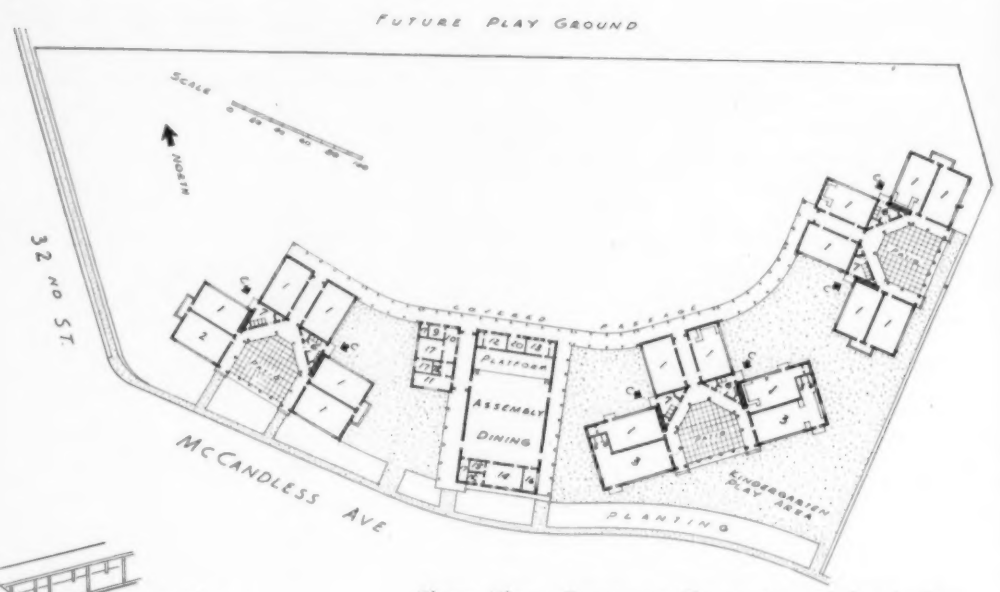
One classroom in each building has been especially adapted and equipped for the special teaching required to teach subnormal groups. These are placed near exits and toilets and are adapted for manual activities, the teaching of basic homemaking skills, and like training. Each school has two kindergarten rooms with segregated kindergarten playgrounds. Administrative units co-ordinate principal's office, public space, secretary's space, teachers' work space, stock room, nurse's office, and health rooms in a single suite. Separate teachers' rooms are provided in each school. The assembly room in each building includes a low stage for best use by elementary school music and speech-arts groups but is fully equipped to serve as a

community center. Exits are so arranged that the assembly facilities may be used without opening the classroom sections of the buildings. Cafeterias are closely co-ordinated with the assembly rooms to facilitate general use.

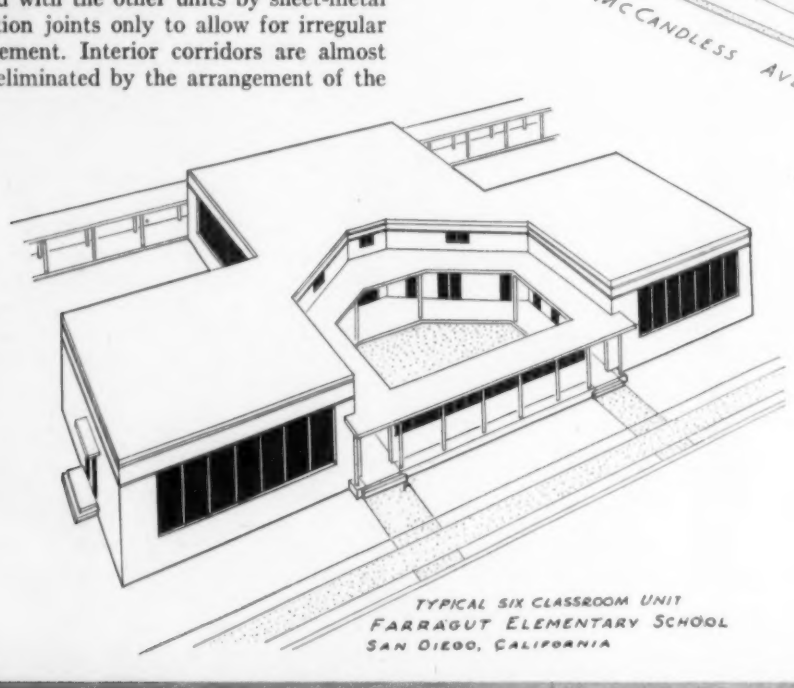
Individual School Features

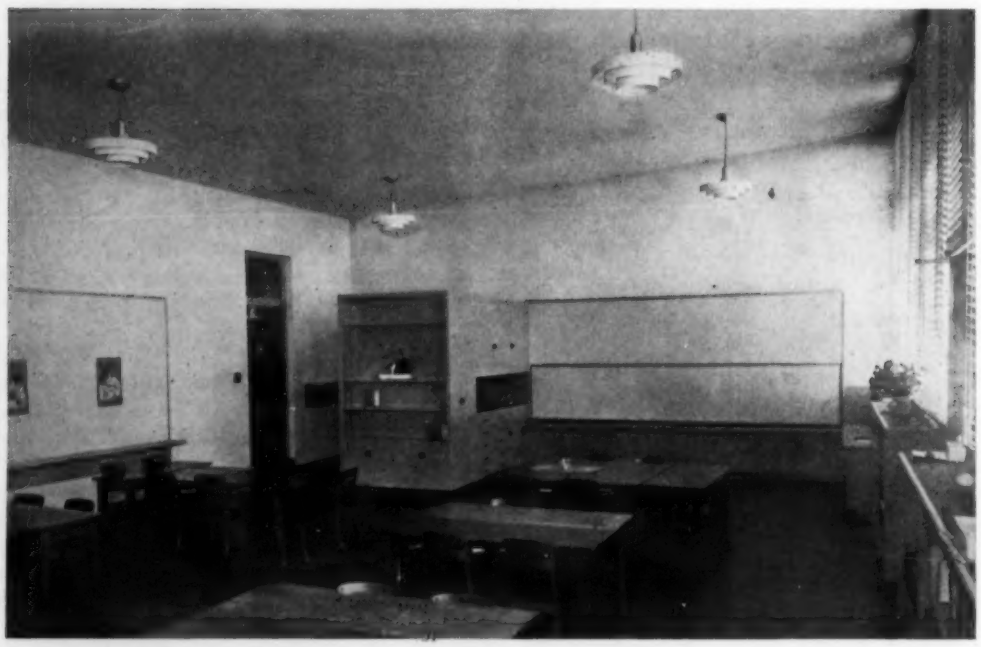
FARRAGUT ELEMENTARY SCHOOL — *Destroyer Base Housing Project — Mr. Sam W. Hamill, architect.*

The adaptation of the Farragut School plan to a site of loose fill over a deep layer of muck produced a most unusual design. The low bearing quality of the soil made it necessary to spread the building greatly. Each two classrooms are independent structural units connected with the other units by sheet-metal construction joints only to allow for irregular soil settlement. Interior corridors are almost entirely eliminated by the arrangement of the two classroom units around a patio to form a six classroom building. The buildings are detailed so that primary grades are in one building, middle grades in one, and upper grades in a third. The patios are paved and provide space for group activities, or they may be used as outdoor stages. Each building is placed so that the patios receive a maximum of sunlight during the school day. The buildings are connected by a semicircular covered passage. Each two classroom units is built on widespread footings to minimize settlement. The exterior walls are of wood to eliminate cracking if irregular settlement does develop. The building has an area of 29,605 square feet and 9370 square feet of covered passage space.



Floor Plan, Farragut Elementary School, San Diego, California. — Sam W. Hamill, Architect.





The Typical Elementary Classroom

In the newly completed San Diego school buildings is planned for the widest possible utility and the greatest comfort of teachers and pupils. The rooms are twelve inches higher on the window side and are equipped with work tables, white or buff writing boards, bookcases, tack boards, etc. The area for storing pupils' clothing is small because overcoats are rarely if ever needed.

LINDA VISTA ELEMENTARY SCHOOL — *Linda Vista Housing Project — Mr. Wm. Templeton Johnson, architect.*

This building serves approximately one half of the elementary enrollment of the Linda Vista Housing Project. Adjustment to the irregularly shaped site resulted in the "F" arrangement of three separate one-story units. Ready access to the playgrounds is possible without traffic congestion. The construction is of frame stucco on concrete foundations with a fireproof shingle roof. The simple low lines of the building and the attractive exterior colors harmonize with the surrounding housing units. The total area of the building is 54,660 square feet and 3735 square feet of passage.

KIT CARSON ELEMENTARY SCHOOL — *Linda Vista Housing Project — Mr. Wm. P. Lodge, architect.*

This is the largest elementary building in San Diego. Because of the small site set aside for the school and the necessity for a major cut and fill in its development, a two-story construction was necessary. The main building is constructed entirely of structural concrete with floors of asphalt tile applied directly to concrete slabs and with a built-up roof. The

(Concluded on page 60)

THE AMERICAN
School Board Journal
A Monthly Periodical of School Administration
Edited by
Wm. Geo. Bruce and Wm. C. Bruce

School Building in 1943

THE happenings of the first year of the war have confirmed the fears of educators who felt that education would suffer a more severe setback during the present struggle than it received during 1917 and 1918. Especially in the field of school-plant expansion and maintenance the complete prohibition of materials and labor have caused a situation from which the schools will require a full decade of recovery and reconstruction before the vast majority of communities have adjusted themselves to the new postwar economy. In the meanwhile, the teaching staffs are laboring under difficulties that interfere with the efficiency demanded by the onrush of political, social, and economic change. The schools have achieved unbelievable adjustments in program and plant and in carrying on the serious business of education for war. They will require endlessly important adjustments of organization and curriculum, as well as of plant and equipment, if they are to serve equally in the coming years of peace.

Some of the present complete stagnation in needed school-building expansion is due to the mistaken notion that nothing whatever can be done at this time to overcome even difficulties due directly to the war. Schoolmen have accepted quite widely the point of view that there will be ample time to get school-building programs under way after peace has come. The latter notion is particularly harmful as may be understood if the rush and the errors of the first and second PWA programs are recalled when literally thousands of buildings were put under construction after only a few weeks of preliminary study and planning.

It is clear that planning at this time is called for along at least three lines: First and foremost is educational planning that will take into account the growing changes in elementary school method and the certain revolution in the purpose and organization of the high school. The acceleration of technological processes, the enormous changes in manufacturing and commercial business, the social changes due to population shifts, the realignment of labor and employer groups, the emerging conceptions of democracy in government and in personal life will have deep and lasting influence on education. Educational philosophy and science will undergo vast changes as will the emphasis on cultural, moral, and vocational aspects of formal and incidental education. What these changes will imply demands the closest attention of the keenest educational statesmen.

A second and equally important line of planning involves the reorganization of administrative and attendance districts, particularly in rural and suburban areas where new housing developments and shifts in population indicate clearly the need of long-range planning for permanent school buildings and transportation. Much of the present community planning seems to give scant attention to schoolhouses as centers for the education and recreation of adults as well as children. Regional planning that takes into account both war and peace conditions requires close attention to the utility of school buildings for numerous activities that the present war is creating and that must be anticipated for future wars. The stabilization of community population trends must be considered before permanent buildings are undertaken. The location of permanent structures in new industrial centers requires the special study of expert community planners as well as of school-building consultants.

A third line of planning involves the division of initiative and responsibility for planning and for financing the vast school construction programs that will get under way the moment the shift from a war to a peace economy begins. Unquestionably, the Federal Government will again make available funds upon some new form of Public Works Administration if only to stabilize the economic situation. It seems to us, however, that it will be extremely unwise to depend upon federal moneys. Far better will be local acceptance of the responsibility, with local funds, with local school executives in full charge of planning and execution of projects, and with state aid in the form of a small subsidy and greatly enlarged expert aid in educational planning. There is less danger to local school autonomy in expert state school-building services than in the federal regulation which inevitably accompanies the federal funds. The accumulation of reserves that will enable school boards to begin a program without mortgaging the future seems to be distinctly worthy of study, particularly if the investment of funds in federal securities which are readily converted into cash can be obtained.

In the employment of Dr. N. L. Engelhardt to have charge of the educational aspects of its school-plant development program, the New York City board of education has taken an advanced position in assuring in its future school buildings the most progressive type of planning for the close adaptation of instructional areas to the widest service for children and adults. For a number of large junior high schools which are immediately needed, the board has engaged outside architects to supplement the Division of Architecture, ably headed by School Architect Eric Kebbon. The action of the New York board is courageous and should encourage boards in smaller communities to overcome the stagnation due to federal building prohibitions, and the pressure of local tax-economy groups. It is well to close down old buildings in declining central areas of cities for economy, but the existence of surplus space in outworn, old buildings should not stop planning for prompt construction of needed schoolhouses in growing, outlying communities.

The fear that design will change after the war, due to technological changes in materials and construction methods, should not hold back school boards from continuous study of building plans. The humanizing of exterior and interior school design on a dignified basis should recognize the interests and abilities of children at the several school levels and insure their growth in taste and appreciation of what a sane generation of German artist-architects designated as the *Gesammt-Kunst* — the total art effect — of buildings.

A final field of present study is in the state and local school-building codes, all of which are growing far too slowly. Not enough forward-looking professional men in education or architecture are engaged in the restatement of the codes. Too many special interests are exerting influence on the codes, pulling and hauling for piecemeal modifications in the direction of safety or health or the use of certain materials. Until the codes are written by schoolmen with the direct purpose of encouraging better educational service, true economy, and the recognition of originality in plan and equipment, these instruments will be a drag on progress or a mere insurance against gross errors.

MUST ESTABLISH SCHOOL CASE

As local communities feel the increased pinch of heavy federal taxes and perhaps forced war-bond purchases, tax delinquencies are likely to occur. The case for increased rather than decreased support is good, but we must clearly establish that case before the jury of public opinion. Most laymen, even the army officers, appreciate the tremendous value of good schools.
—*E. H. Hanson*, Rock Island, Ill.

Check List for Elementary School-Building Plans

Thomas J. Higgins[1]

The present list is intended as a quick check of school-building plans, both for administrators and architects. It does not cover all phases of the planning of a school building or all the special rooms and shops that may be desired in certain buildings, but it includes the items most commonly encountered. In practice it has been found a useful means for preventing the overlooking of any important item.

Further check lists for junior and senior high schools will appear in subsequent issues of the JOURNAL.

School .....
Location .....
Date .....
Dimensions of building .....
.....
Cubical contents .....
Number of stories .....
Orientation .....
Pupil capacity .....
Association of subjects .....
.....
.....
.....
.....
.....

AREA DISTRIBUTION:

Per cent of total floor area devoted to:
- Instruction .....
- Stairs and corridors .....
- Administration .....
- Walls, partitions, flues, accessories .....

ADMINISTRATIVE SUITE:

Location .....
Size .....
Public space .....
Clerk's space .....
Counter .....
Lavatory .....
Wardrobe .....
Bulletin board .....
Storeroom .....
Principal's office .....
Conference room .....
Clinic .....
Storeroom .....
Toilet .....
Floors .....
Heating .....
Lighting .....
Base plugs .....
Public telephone booth .....
Radio control .....
Electric program clock .....
Mailboxes .....
Key case .....
Telephone .....

AUDITORIUM:

Location .....
Number of seats .....
Adaptable to public use .....
Public foyer .....
Bulletin boards .....
Floors .....
Walls .....
Acoustics .....
Heating .....
Lighting .....
Projector outlets .....
Men and women toilets .....
Drinking fountains .....
Stage .....
Size .....
Footlights .....
Border lights .....
Proscenium arch .....
Orchestra space .....
Base plugs .....
Dressing rooms .....
Scenery storage .....
Broadcasting system .....
Clock .....
Curtain and cyclorama .....
Fire hose .....

GYMNASIUM:

Number .....
Location .....
Adaptable to after-school use .....
.....
Heating .....
Ventilating .....
Adjoining playground .....
Orientation .....
Size .....
Ceiling height .....
Glass area .....
Type of windows .....
Draw curtains .....
Height of sill above floor .....
Toilets .....
Drinking fountains .....
Recessed ceiling lights .....
Kind of floor .....
Kind of walls .....
Acoustical material .....
Projector outlets .....
Radio outlets .....
Bulletin board .....
Piano recess .....
Telephone .....
Clock .....
Storeroom .....
First-aid room .....
Janitor's closet .....
Equipment .....
.....
.....
Showers and dressing rooms .....

CLASSROOMS:

Number .....
Number of pupils .....
North light .....
East light .....
South light .....
West light .....
Size .....
Ceiling height .....
Glass area .....
Kind of glass .....
Unilateral .....
Type of windows .....
Height of sill above floor .....
Kind of floors .....
Kind of walls .....
Size and type of glass in doors .....
.....
Wardrobes .....
Lockers .....
Coat room .....
Number of seats .....
Type .....
Adjustable .....
Teachers' wardrobe .....
Recessed .....
Teachers' cases .....
Recessed .....
Writing boards .....
Color .....
Material .....
Number lineal feet:
- Front wall .....
- Side wall .....
- Rear wall .....

Corkboard .....
No. of lineal feet .....
Type of artificial lighting .....
.....
F.C. at desk top .....
Telephone .....
Plug receptacles .....
Radio outlet .....
Clock .....
Project area .....
Equipment .....

KINDERGARTEN:

Number of pupils .....
Orientation .....
Size .....
Ceiling height .....
Glass area .....
Unilateral .....
Type of windows .....
Kind of glass .....
Height of sill above floor .....
Kind of floor .....
Kind of walls .....
Number of doors to corridor .....
Recessed in corridor wall .....
Size and type of glass in doors .....
.....
Door to exterior play space .....
Boys' toilet .....
Girls' toilet .....
Lavatories .....
Wardrobes .....
Storeroom .....
Teachers' cases .....
Recessed .....
Teachers' wardrobe .....
Recessed .....
Storage cases .....
Recessed .....
Writing boards .....
Color .....
Material .....
Number of lineal feet .....
Corkboard .....
Type of artificial lighting .....
.....
F.C. at table tops .....
Plug receptacles .....
Radio outlet .....
Clock .....

GIRLS' VOCATIONAL ROOM:

Number .....
Number of pupils .....
Size .....
Ceiling height .....
Glass area .....
Unilateral .....
Type of windows .....
Height of sill above floor .....
Kind of floor .....
Kind of walls .....
Number of doors to corridor .....
Recessed in corridor wall .....
Size and type of glass in doors .....
.....
Number of tables .....
Teacher's demonstration table .....
Number of ranges .....
Number of sinks .....
Number of sewing machines .....
Ironing board .....
Workbench .....
Teachers' cases .....
Recessed .....
Special cases .....
Recessed .....
Teachers' wardrobe .....
Recessed .....
Writing board .....
Color .....
Material .....
Number lineal feet .....
Corkboard .....
Type of artificial lighting .....
.....
F.C. at table top .....
Storeroom .....
Telephone .....
Plug receptacles .....
Gas outlets .....
Radio outlets .....
Clock .....
Equipment .....

BOYS' VOCATIONAL ROOM:

Number .....
Number of pupils .....
Size .....
Ceiling height .....
Glass area .....
Kind of glass .....
Unilateral .....
Type of windows .....
Height of sill above floor .....
Kind of floor .....
Kind of walls .....
Number of doors to corridor .....
Recessed in corridor wall .....
Size and type of glass in doors .....
.....
Number of benches .....
Sink .....
Lumber rack .....
Jig saw .....
Soldering furnaces .....
Grinder .....
Teachers' case .....
Recessed .....
Special cases .....
Recessed .....
Teachers' wardrobe .....
Recessed .....
Writing board .....

(Continued on page 56)

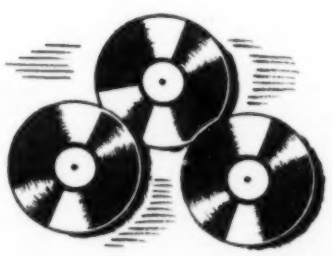
[1]President, National Council on Schoolhouse Construction, and Assistant Director of School Building Survey, Chicago, Ill.

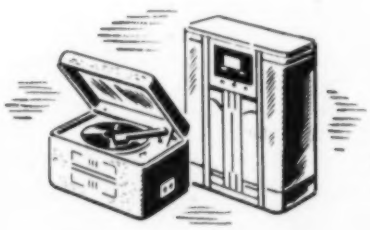
More Power to You!

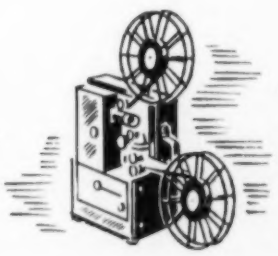
RCA audio-visual aids increase your power to make classroom work interesting and effective, to make students more appreciative and receptive. They enable students to *study* material that supplements the textbook, to *see* material that goes beyond the blackboard presentation, to *hear* material that exceeds the scope of the teacher's oral effort.

Whether they be records or radios, phonographs or films, screen or sound equipment, RCA audio-visual aids are no longer a mere accessory to education. They are everywhere becoming an integral part of it. Thousands of schools consider them as fundamental to teaching as the very desks and pencils and books of the classroom.

Today, many RCA audio-visual aids are unobtainable because of the war production program. Others, such as Victor Records, can still be purchased. If your school is incompletely equipped with RCA audio-visual aids today, make them item number one on your list of post-war purchases. RCA audio-visual aids will be an invaluable tool to help you meet the vast new problems and readjustments which will confront education when peace returns.



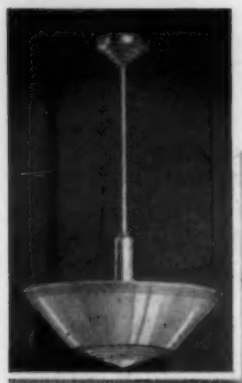




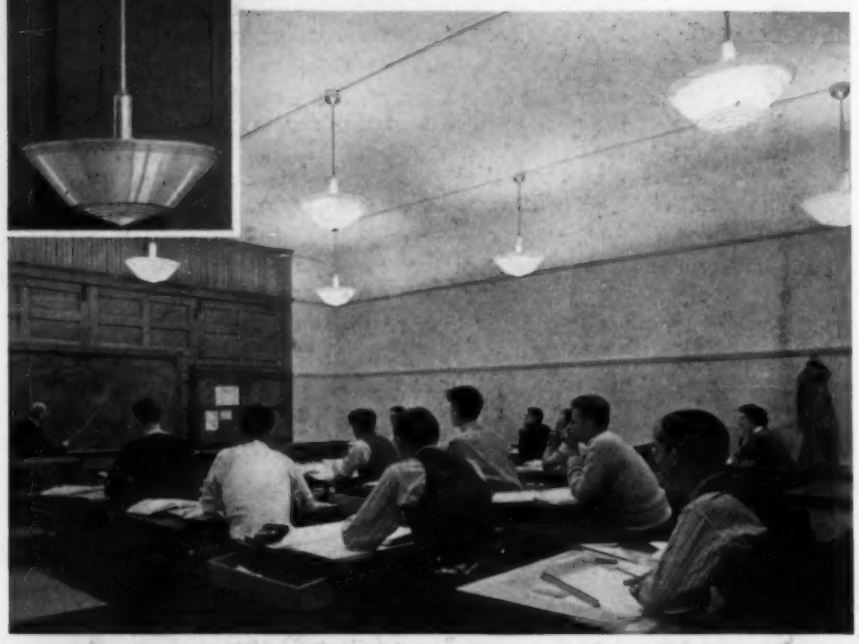
RCA

RCA AUDIO-VISUAL SERVICE

Educational Dept., RCA Manufacturing Company, Inc., Camden, New Jersey



Wakefield **COMMODORES** *provide eyesight protection for training* ***MANPOWER***



Wartime E. S. M. W. T. class at CASE SCHOOL OF APPLIED SCIENCE. 50 foot-candles on drafting since room was re-lighted with Commodores.

Many a school and college has taken on a double job now . . . serving students by day . . . and at night, training people for war work, Wakefield COMMODORES can help on both . . . guarding eyesight from strain . . . encouraging greater alertness and attention. For the COMMODORE not only gives diffused light but 86% of the light from the bare bulb by test of impartial Electrical Testing Laboratories. Maintenance cost is low; since the Plaskon shade of this unit is easy and safe to handle and clean. Note: The COMMODORE is still available for essential use. Write for details.

THE F. W. WAKEFIELD BRASS CO.

13 American Park, VERMILION, OHIO

(Continued from page 54)

Color .....
Material .....
Number of lineal feet .....
Corkboard .....
Type of artificial lighting .....
.....
F.C. at bench top .....
Storeroom .....
Telephone .....
Plug receptacles .....
Gas outlets .....
Radio outlet .....
Clock .....
Equipment .....

HOME MECHANICS ROOM:

Number of pupils .....
Size .....
Ceiling height .....
Glass area .....
Kind of glass .....
Unilateral .....
Type of windows .....
Height of sill above floor .....
Kind of floor .....
Kind of walls .....
Number of doors to corridor .....
Recessed in corridor wall .....
Size and type of glass in doors ....
.....
Number of benches .....
Number of tables .....
Gas ranges .....
Sink .....
Teachers' case .....
Recessed .....
Special cases .....
Recessed .....
Teachers' Wardrobe .....
Recessed .....
Writing board .....
Color .....
Material .....
No. of lineal feet .....
Corkboard .....
Type of artificial lighting .....
.....
F.C. at table top .....
Storage .....
Telephone .....
Plug receptacles .....
Gas outlets .....
Radio outlet .....
Clock .....
Equipment .....

LIBRARY:

Location .....
Size .....
Ceiling height .....
Glass area .....
Kind of glass .....
Unilateral .....
Type of window .....
Kind of floor .....
Kind of walls .....
Sound deadening material in ceiling and walls .....
Number of doors to corridor .....
Recessed in corridor wall .....
Number of tables .....
Number of seats .....
Number of volumes .....
Kind of stacks .....
Periodical rack .....
Artificial lighting .....
Type .....
F.C. at table top .....
Book-repair room .....
Sink .....
Storeroom .....
Telephone .....
Clock .....
Bulletin board .....
Plug receptacles .....
Radio outlet .....

TOILET ROOMS:

Number .....
Location .....
Number of water closets .... girls'
Number of water closets .... boys'
Stall doors .....
Number of urinals .....
Number of lavatories .....
Liquid soap .....
Electric dryers .....
Kind of floor .....
Kind of walls.....

ENTRANCE FOYER:

Size .....
Bulletin boards .....
Seats .....

CORRIDORS:

Width .....
Ceiling height .....
Fireproof .....
Kind of floor .....
Kind of wainscot .....
Recessed lockers .....
Number of lockers .....
Size of lockers .....
Recessed rubbish receptacles .....
Recessed drinking fountains .....
Number .....
Janitors' closets .....
Clocks .....

STAIRWAYS:

Number .....
Location .....
Fireproof .....
Width .....
Height of riser .....
Width of tread .....
Type of tread .....
Handrails .....
Fire hose .....

SPECIAL FACILITIES:

Fire alarms .....
Automatic .....
Fire hose in corridors .....
Panic bolts on exit doors .....
Electric-clock system .....
Bells in corridor .....
Bells on exterior of bldg. .....
Vacuum-cleaning system .....
Incinerator .....

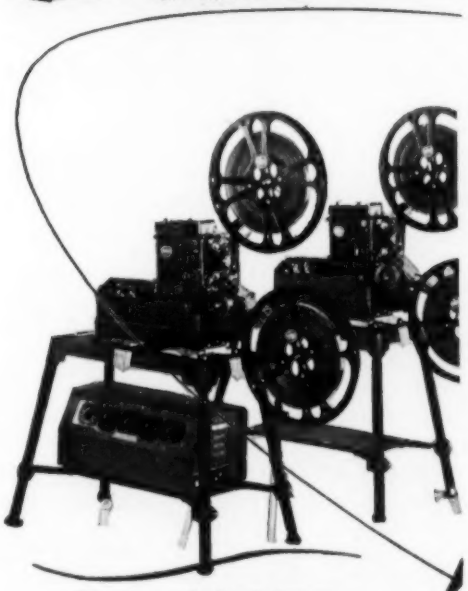
SPECIAL ROOMS:

Teachers' rest rooms .....
Teachers' toilets .....
Locations .....
Teachers' lunchroom .....
Kitchen .....
Clinic .....
Location .....
Engineer's office .....
Janitors' and helps' room .....
Toilets .....
Basement used for classrooms ....

(Concluded on page 58)

MOVIES ARE EAGERLY AWAITED

at our far distant outposts



The above dual unit Ampro-sounds are typical of those used in "special services" overseas

The roar of a huge U. S. Patrol bomber ploughing to a stop in the harbor is always welcome music to American fighters at faraway bases. Among other things, it means mail from home *and a fresh supply of the latest motion picture releases!*

Every inch of space in our vast fleet of cargo planes is precious—is urgently needed for transporting vital medical supplies and important war materials. Still our government considers motion pictures so valuable to the maintenance of high morale in the U. S. armed forces that the latest films, in 16mm. versions, are classed as a "must" for our wartime skyway freight lines.

Thousands of Ampro projectors are being utilized in a vast 16mm. motion picture program for training and entertaining United Nation soldiers on both fighting and production fronts. Still more projectors are needed! Private owners of 16mm. projectors are urged to contact Civilian Defense authorities in their local communities and enlist their machines in this vital wartime program.

100% of Ampro facilities are engaged in the production of projectors and precision war equipment for the United Nations. Ampro engineering research continues undiminished—assuring civilian users more efficient projectors than ever when the war is over. In the meantime you can plan for the future by keeping up with the newest developments in 16mm. projectors. Write today for latest Ampro Catalog!

The Ampro Corporation, 2839 N. Western Ave., Chicago, Ill.

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One ALL-PURPOSE Laboratory SERVES ALL FIVE SCIENCES

Hamilton All-Purpose Science Equipment has been designed to save you money. We know that equipping science rooms is costly especially if you can not use each science room every period in the day. You will welcome Hamilton All-Purpose science equipment. It is available at a reasonable cost. And you get the benefit of Hamilton quality . . . there is no sacrifice of quality, the low price is due entirely to simplified design and quantity manufacture.

PROMPT SHIPMENT

The Number L-245 All-Purpose Table shown at the right can be shipped in three days after receipt of your order. Other All-Purpose items can also be shipped promptly. Send in the coupon for full details.

1. CHEMISTRY
2. PHYSICS
3. BIOLOGY
4. GENERAL SCIENCE
5. AGRICULTURE

L-245

TYPICAL ALL-PURPOSE TABLE

Hamilton Manufacturing Company

TWO RIVERS, WISCONSIN

Please send me complete information on All-Purpose Science Equipment. ASBJ-1-43

Signed .....

School and Position

Address .....

City and State .....

(Concluded from page 56)

.....	Location .....
.....	Fireproof .....
.....	Kind of boilers .....
	Fuel .....
HEATING & VENTILATION:	Fuel storage .....
Method of heating and ventilating building	Stokers .....
	Fans .....
.....	Kind of power .....
.....	Thermostatic control .....
Building heated and ventilated in units	Air washer .....
	Humidifier .....
.....	Height fresh-air intake above ground .....
Boiler room	

ELMONT PLANS FOR SCHOOL BUILDINGS

(Concluded from page 23)

plotted areas. A third significant fact was that including both plotted and unplotted areas the per cent of saturation was but 28.39 (4,570 + 16,097).

It should be pointed out that no community ever reaches 100 per cent housing saturation. Many social and economic reasons exist to prevent this. However, older developed communities in Nassau County generally have reached a percentage of saturation ranging from 75 to 80 per cent. Thus, even though it were supposed that Union Free School District No. 16 would never go beyond 75 per cent of saturation, it was still clear that the board of education did not propose to overbuild the community with schools in the currently submitted proposition.

All of the facts presented heretofore were reduced to simple question-and-answer form, set up in a brochure, and used in the building campaign before the people. It is significant that despite the outbreak of the present war the people approved the proposition by a vote of 4 to 1.

As the war progressed and government regulation of building became more stringent, only one of the proposed buildings has gone forward. What disposition was made of building plans and building funds, together with descriptive details of the proposed buildings will appear in a later article. The planning of community support and the utilization of staff and expert assistance will also be treated at that time.

SCHOOL BONDING POLICY

(Concluded from page 42)

Del Manzo, M. C., *Public School Bonding,* Doctor's thesis, State University of Iowa, 1924.

Educational Finance Inquiry, Vols. I–XIII. Published for American Council on Education, Washington, D. C., by Macmillan, 1924–25. See especially Vol. VIII by Russell *et al., Financing of Education in Iowa,* and Vol. IX by Morrison, *The Financing of Public Schools in the State of Illinois.*

Eelkema, H. H., *A Case Study of Superior Programs of Local Public School Finance Management,* Doctor's thesis, State University of Iowa, 1933.

Engelhardt, N. L., and Engelhardt, F., *Planning School Building Programs,* Bureau of Publications, Teachers College, Columbia University, 1930.

Fowlkes, J. G., *School Bonds,* Bruce Publishing Co., 1924.

Halsey, H. R., *Borrowing Money for the Public Schools,* Bureau of Publications, Teachers College, Columbia University, 1929.

Hamon, R. L., "Planning Comes Now," *The Nation's Schools,* Vol. 30, August, 1942.

Moehlman, A. B., *Public School Plant Program,* Rand McNally, 1929.

Morrison, H. C., *Management of the School Money,* University of Chicago Press, 1932.

Rainey, H. P., "Financing Capital Costs in Education," AMERICAN SCHOOL BOARD JOURNAL, Vol. 73, December, 1926.

Consult also publications on local debt administration issued by Municipal Finance Officers' Association, Chicago, Ill.

This Typewriter has been to War...

Typewriters, too, are casualties. This one was executing essential tasks on board a U. S. warship when carrier-borne enemy aircraft attacked. Note how portions of the machine have been melted by fire which, incidentally, burned out the desk from under it.

will you sell one to replace it?

Here's a veteran of our Navy . . . no longer able to serve under the Stars and Stripes.

"Make good my loss" is what this Underwood says to *you*, to every educator in charge of commercial courses.

Mutely it asks the question "Have you yet sold to the government one-fourth of your machines?"

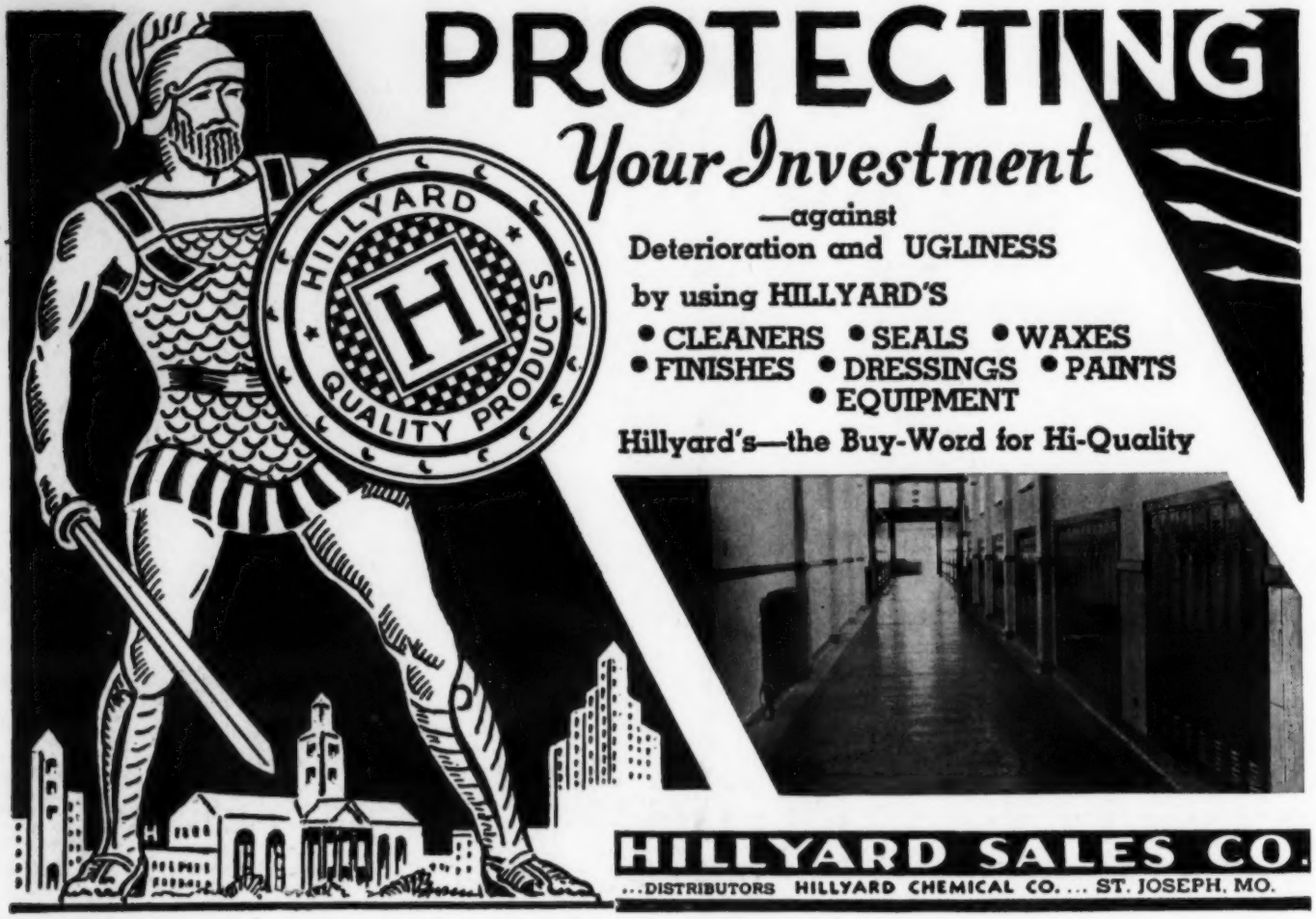
You know, probably, that Underwood Elliott Fisher and other typewriter manufacturers are busy turning out fighting equipment.

Consequently our government looks to *you* for the extra typewriters so vitally needed to speed the Nation's victory.

Telephone the nearest Underwood Elliott Fisher branch. Join the patriotic companies who are sharing their typewriters with our Army and Navy. Underwood Elliott Fisher Company, One Park Ave., New York, N.Y.

Underwood Elliott Fisher Company

Former and future makers of typewriters, adding and accounting machines



NEW ELEMENTARY SCHOOLS IN SAN DIEGO

(Concluded from page 52)

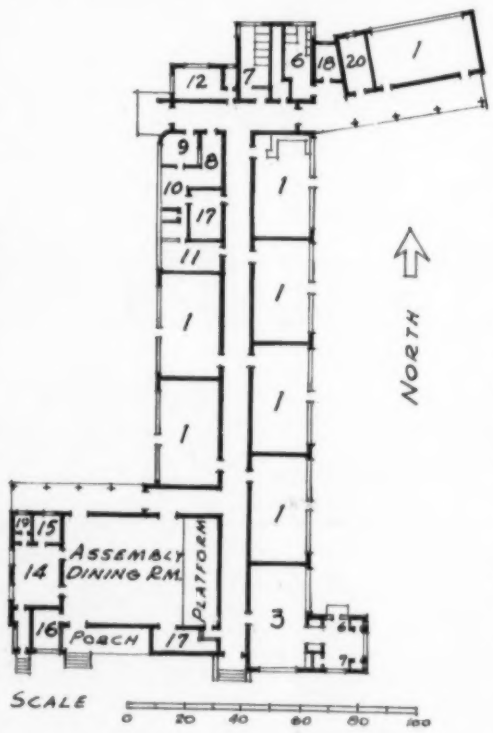
kindergarten building is of frame-stucco construction with attractive semicircular workrooms and a playground separated by a differential in the grade level. The simple lines of the main building are enhanced by murals cast in the concrete depicting events in the life of Kit Carson. The total area is 64,064 square feet with 2255 square feet of passage.

ANDREW JACKSON ELEMENTARY SCHOOL — *Mr. Wm. Templeton Johnson, architect.*

This small frame-stucco building was the only new building necessary in the city outside of the federal housing projects. The combination assembly-cafeteria uses an arched truss without cross rods with the thrust carried in horizontal beams in the side corridors which results in an attractive small assembly room.

CHOLLAS ELEMENTARY ADDITION — *Chollas View Housing Project — Mr. Clyde Hufbauer, architect.*

Because the Chollas View Housing Project is of temporary housing units, the school addition to serve it was built up of low cost portable classroom units. The units are placed on sills without concrete foundations with exterior wall finish of painted redwood siding. The sloping roof extends to form a cantilever roof over the corridor. All floors are of beech, and the interior finishes are of plywood with soft board for acoustical treatment. Each classroom may be detached and moved independently without reconstruction. When the housing project is abandoned, the units will serve as portable classrooms to care for temporary increases in enrollment. The classrooms are of standard size and incorporate all typical elementary classroom details.



Floor Plan, Jackson Elementary School, San Diego, California.

In spite of the program just completed, the continued flow of population to San Diego and the construction of 2800 more federal housing units has already created a need for additional school facilities. Further construction is, of course, entirely subject to governmental approvals.

PERSONAL NEWS

► W. EARL RUPERT, supervising principal of schools at Kennett Square, Pa., on December 4 was honored by the people of the community for the completion of 25 years of meritorious service in the schools. A program was carried out and a turkey dinner was served by the school employees on the stage of the auditorium. Mr. Rupert was presented with a chair and his wife received a bouquet of roses.

► O. C. PRATT, superintendent of schools at Spokane, Wash., has announced his retirement, to take effect at the close of the school year in June.

► EDWIN H. MINER, superintendent of schools at Wellesley Hills, Mass, has enlisted in the Air Service as a first lieutenant and is located at Bolling Field, Wash. MR. CLIFFORD S. BRAGDON, of New Rochelle, N. Y., has been named acting superintendent to replace Mr. Miner.

► DR. N. L. ENGELHARDT, the new associate superintendent of the New York City schools, who took up his duties as a member of the board of superintendents on December 2, has been assigned by Supt. John E. Wade as head of the school system's division of housing and business administration, a position which Dr. Wade filled prior to his elevation to the superintendency.

As associate superintendent in charge of housing, Dr. Engelhardt will supervise the layout, construction, maintenance, and operation of school buildings. He will also head all business administration agencies of the school system, except the Bureau of Finance, which will continue to operate under Auditor Charles Gilman and Dr. Wade.

The bureaus which will be under the supervision of Dr. Engelhardt are the Bureau of Construction, headed by Eric Kebbon; the Bureau of Plant Operation and Maintenance, headed by Harold D. Hynds; and the Bureau of Supplies, headed by G. L. Graef.

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Keep Up Interest, Readability, Durability
Government bulletins of all types . . . current events brochures . . . series of new pamphlets can all be kept in order, ready for instant and constant use in these neat, inexpensive Gaylord Binders. Our standard sizes will acommodate smaller reading matter—from folders to magazines, and special sizes will be gladly made to order.
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School Law

Schools and School Districts

Where a bond issue was voted by a majority of the real property taxpayers of a high school district in literal compliance with a constitutional provision relating to bond issues, the bonds were an obligation of all the property of the district at the time they were voted and of property subsequently brought into the district. Ariz. code of 1939, § 54–408; Ariz. const. art. 7, § 13. — *Southern Pacific Co.* v. *Maricopa County,* 129 Pacific reporter, 2d 312, Ariz.

In the absence of a statute the part of a school district or other municipal corporation that remains after parts have been detached retains all its property, powers, rights, and privileges and remains subject to all its obligations and duties. — *People ex rel. Hagler* v. *Chicago, B. & Q. R. Co.,* 43 Northeastern reporter 2d 989, 380 Ill. 120.

School District Government

Members of a Kentucky county board of education are liable for failure to perform their duty to approve employment of a school teacher nominated by the superintendent of the school district although the board in its official capacity is exempt from liability where it has paid a substitute teacher the money appropriated for the position. Kentucky statutes, § 4399–34. — *Duff* v. *Chaney,* 164 Southwestern reporter 2d 483, Ky.

Although the duties of nominating and approving the nomination of a school teacher devolve on the superintendent of the school district, for the position of assistant high school teacher, the new superintendent who submitted to the board the name of another who was appointed to the position and received emoluments thereof, was equally liable with members of the board to the retiring superintendent's nominee for damages resulting from failure to appoint such nominee. Kentucky statutes, § 4399–34. — *Duff* v. *Chaney,* 164 Southwestern reporter 2d 483, Ky.

School District Property

In determining the amount of care owed by school authorities to a boy nearly 18 years of age, a California court should not disregard the fact that even boys of 17 and 18, particularly in groups where herd instinct and competitive spirit tend naturally to relax vigilance, are not accustomed to exercise the same amount of care for their own safety as persons of more mature years. — *Satariano* v. *Sleight,* 129 Pacific reporter 2d 35, Calif. App.

Public school authorities of California are responsible for the safety of children during school hours and are bound to exercise an amount of care for their safety during such period commensurate with the immaturity of their charges and the importance of their trust. — *Satariano* v. *Sleight,* 129 Pacific reporter, 2d 35, Calif. App.

In an action against California school authorities for injuries sustained by a high school student when struck by an automobile while crossing the street, the plaintiffs should be allowed full latitude to develop the extent and duration of the practice of students in crossing the street, at a point outside of a marked crosswalk where an injury occurred, the school authorities' knowledge of the practice, the amount of traffic on the street, and the reasonableness of time allowed the students between classes to go from classroom to gymnasium, to change their clothes and to proceed to the athletic field. — *Satariano* v. *Sleight,* 129 Pacific reporter 2d 35, Calif. App.

Where the school authorities knew of the dangerous practice of a large part of the students of crossing at a point outside of a crosswalk, a fairly heavily traveled street that they were required to cross in going from class to class, whether the failure of the school authorities to attempt to prevent such practice by means other than specific warnings to individuals or groups in those accidental instances when teachers happened to be present, constituted negligence rendering a school district liable for injuries sustained when a student was struck by an automobile while crossing the street enroute to class, was for a jury. — *Satariano* v. *Sleight,* 129 Pacific reporter 2d 35, Calif. App.

Teachers

The superintendent of a Kentucky school district has the duty to nominate teachers for the ensuing year, and in the absence of a showing of cause to the contrary, the teacher recommended has a "vested right" to have her nomination recognized by the board before the school year begins. Kentucky statutes, § 4399–34. — *Duff* v. *Chaney,* 164 Southwestern reporter 2d 483, Ky.

A teacher with tenure has a "legislative" status but not a "contractual status" which may not be modified. N.J.S.A. 18:13–16. — *Greenway* v. *Board of Education of City of Camden,* 28 Atlantic reporter 2d 99, 129 N.J.L., 46, N. J. Sup.

Where the board of education of the city of New York reduced the staff of teachers of swimming for reasons of economy, veterans whose positions were abolished by such an action were not entitled to be placed at the head of a preferred list subsequently created for teachers of swimming under the New Jersey law, § 22, 31. — *Smith* v. *Board of Education of City of* New York, 36 N.Y.S. 2d 968, 178 Misc. 988, N. Y. Sup.

Under the Kansas teachers' retirement fund law, which contained a provision permitting a teacher within one month after its enactment to file a written request for exemption which would constitute a waiver of any benefits under the retirement fund, the failure to file a request for exemption was a manifestation of the "assent" of a teacher to participate in the benefits under the act. Kans. general statutes of 1935, 72–1726 to 72–1734. — *State ex rel. Parker* v. *Board of Education of City of Topeka,* 129 Pacific reporter 2d 265, 155 Kans. 754.

REPAIRS AND REPLACEMENTS for modern sanitation
Limitations on your budget for new construction or for replacements should prove no hindrance to the installation of Halsey Taylor Drinking Fountains in your school. They are available in a wide variety of styles and price range. Today, as in the past, they are the most sanitary devices of their kind for the protection of pupils against contamination! Get the facts! Write.
THE HALSEY W. TAYLOR CO. · WARREN, OHIO
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AUTOMATIC STREAM CONTROL · TWO-STREAM PROJECTOR
DRINKING FOUNTAINS

PREPARATION FOR A POSTWAR BUILDING PROGRAM IN SMALL SCHOOL DISTRICTS

N. E. Viles[1]

School officials should understand that an anticipated postwar program for rehabilitating existing and developing needed new school-building facilities may be in competition with other proposed construction programs. Consequently, it seems desirable that local school officials make plans now to secure ample consideration of their school-building needs in a postwar program. At least two phases should be considered in these preparatory plans.

Local school and state department officials should make a study of existing and future school-plant needs in the various districts. Studies of this type should be based on needed and anticipated changes in the curricular offerings and in school organization. Proposed improvements should be outlined in detail showing: anticipated changes in the school load; building rehabilitation possibilities; new construction needed, including number of rooms or units with sizes for each, as well as special features, services, and arrangements desired. The proposed program should be based on and accompanied by a feasible financing plan.

However, plans developed by and wholly in the hands of local officials may not avail in competition with other proposed construction programs. Awareness of need and a general public acceptance of the proposed program should be developed through consultation, and by inducing local citizens to participate in planning the program. In addition, the proposed program should be presented to, and recorded by, the proper state and federal officials.

[1]Director School Building Service, State Department of Education, Jefferson City, Mo.

CONSTRUCTION OF NEW SCHOOL BUILDINGS

Philip B. Fleming[1]

In my opinion, construction of new schools hereafter, for the duration of the war, will not be possible except in those communities that have become overcrowded by Army or Navy personnel or the families of warworkers. The situation in regard to critical materials is such that, even in those instances, I do not believe it will be possible to undertake anything beyond temporary building.

School officials should plan now for the additional construction they will need after the war. If sites can be acquired now, blueprints drawn, and specifications written, much time will be saved later on in replacing obsolete structures, catching up on additional needs, and putting labor to work.

Some boards of education already have prepared postwar building programs in cooperation with the Public Works Reserve and its successor, the Local Public Works Programming Office of the Federal Works Agency. For budgetary reasons it was necessary, much to my regret, to terminate the Programming Office last July. We are hopeful, however, that authorization soon will be forthcoming to permit us to resume and expand the postwar planning work.

In its larger aspects, the problems of reconstruction will be national in scope. But school officials should not wait complacently for the Federal Government to do the whole job. They also have a part to play; their leadership also is needed. Any national plan must of necessity be made up of hundreds of small community plans. For this reason, I urge school officials to undertake such planning and programming as is within their means so that they will be prepared to cooperate in the realization of the national program if, and when, the opportunity comes.

[1]Brig. General, U. S. Administrator, Federal Works Agency, Washington, D. C.

► Walter Schilling has been appointed supervisor of school buildings and grounds for the board of education at East Moline, Ill. His duties are to supervise school custodians, look after repairs and purchases for school properties, and to have charge of truant work.

► The school board of the township school district at Munising, Mich., has reorganized with the election of Dr. L. B. Ruggles as president. He succeeds W. C. Duffet, who has retired after a service of twenty years.

► Fred J. Miller has been appointed secretary pro tem of the school board at Waterloo, Iowa, until July 1, 1943. Mrs. Adah K. Train, former secretary of the west side board, is assisting Mr. Miller in the combined board's work.

► Morris E. Siegel, formerly director of the evening and continuation schools of New York City, has been elected an assistant superintendent.

FOR PRACTICAL TRAINING

Use the Lathes that Industry Uses!

TEACHING HELPS
For Shop Classes

South Bend teaching helps — books, sound films, wall charts and bulletins on the care and operation of lathes — are available for school shop instruction. Write for Bulletin No. 21-C.

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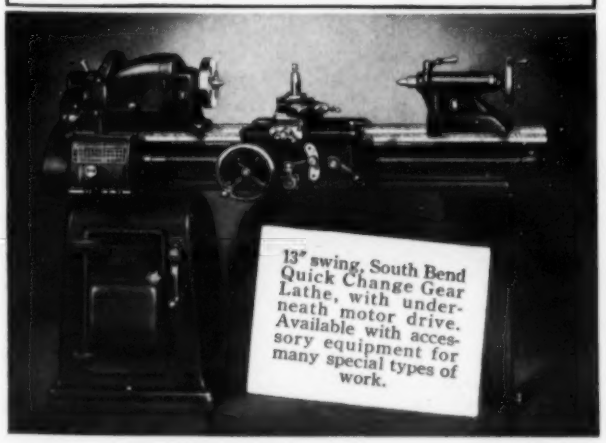
13" swing, South Bend Quick Change Gear Lathe, with underneath motor drive. Available with accessory equipment for many special types of work.

For every new machine added to today's fast moving war production program, one or more additional operators must be available. And many more must be trained to take the places of those called for service with the armed forces. The need for men and women who are trained in the operation of modern machine tools was never more urgent.

With shop equipment that is the same as that used in Industry, new workers can be given practical training in the school shop. Being familiar with the tools of industry, they are better prepared to step into war plant jobs—ready to serve the Nation by helping to increase vital production.

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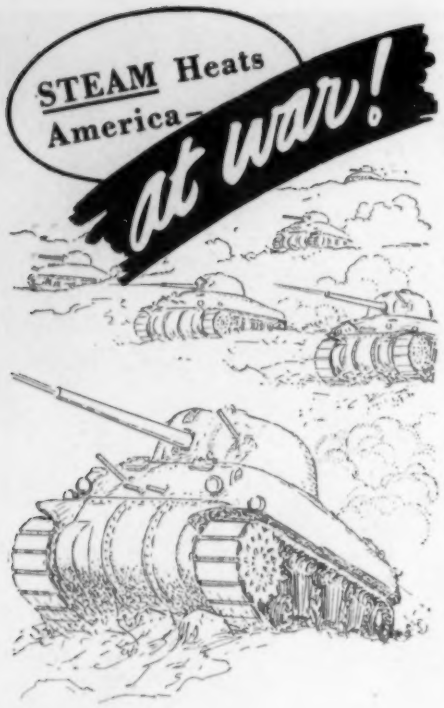

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School Administration in Action

SPRINGFIELD SCHOOLS GEARED TO THE WAR EFFORT

A number of significant changes have been effected in the school curriculum of the public schools of Springfield, Mass., in order to meet the new responsibilities placed upon the schools due to the war situation. In all, eight changes have been effected involving activities which the schools are carrying on.

1. The admission age for the kindergarten has been reduced from 4 years 6 months, to 4 years, to permit young married women to seek employment.

2. Five child-care centers have been established to provide all day care for preschool children of working mothers and before and after school care for children from 4 to 12 years of age, whose mothers are employed.

3. The physical education program in the secondary schools has been expanded, to require physical education in each class of the high school. The curriculum itself has been changed to provide an intensive "toughening up" program.

4. The technical high school has increased the emphasis on mathematics and physics courses. Radio and electricity courses have been expanded. Aeronautics, preflight aviation, and auto-mechanics courses have been introduced, and a flying club has been organized for boys from 15 to 17 years of age. Girls have been enrolled in machine-shop courses and drafting classes.

5. The trade school is offering additional courses for soldiers in machine shop, airplane, mechanics, and radio communications.

6. Mathematics and physics courses have been expanded in the Commercial and Classical high schools. The latter has introduced courses in radio, electricity, and aeronautics.

7. The adult education courses have been stepped up this year, with an increased number of courses in mathematics and science. Other courses in auto mechanics, electricity, machine-shop practice, sheet-metal work, welding, and drafting are available. Courses in preflight aviation, cadet pilot training, navigation, and radio communication are being offered to students about to be called into the armed forces.

8. The trade school is offering training to men and women in defense training courses, 24 hours a day, to fill the labor needs of the war industries.

COOPERATIVE BUYING OF BOOKS AND SUPPLIES IN HENNEPIN COUNTY, MINNESOTA, SCHOOLS

Mr. Robert E. Scott, superintendent of the schools of Hennepin County, Minn., in his annual report of the schools for 1941–42, describes briefly the administration of the plan of cooperative buying of books and supplies. He shows that during the past school year the office of county superintendent bought textbooks and supplies cooperatively for 62 out of the 75 rural schools. A committee of five, representing each of the districts, assisted in the purchases.

The supplies were purchased at a discount on large quantity orders from a leading Twin-City school supply company of Minneapolis. Under the plan, the board receives the benefit of purchasing one dozen pencils at the gross price per dozen. Boards pay with one check only, and they are supplied with the original bills.

A number of additional schools have applied for the cooperative plan. The delivery costs and postage on books are prorated to each school, according to the amount delivered. The savings to the school districts of the county under the plan, have amounted to approximately $2,503.

Cooperative Buying Plan for 1941–42

Textbook purchases for 62 schools	$ 6,381.02
Supplies purchased for these schools	3,633.49
Grand Total	$10,015.41
Savings to Hennepin County Schools	$ 2,503.85

HIGH SCHOOL SENIORS AND THE WAR

A proposal of the Educational Policies Commission that students be admitted to college up to a year before high school graduation is being opposed by educational authorities. Mr. Edwin R. Van Kleeck, assistant commissioner of education, New York State, in a recent statement, said that this means that the colleges want to be paid by high school seniors for doing what the high schools would do better and without charge.

The argument advanced by the Commission seems to be that high school senior boys will get a toe hold in college before they have to enter military service at the age of 18. It anticipates that most of them after the war will resume their educational preparation for the professions.

It is pointed out that the best high schools are in some instances better as to faculty, instructional methods, and equipment than the poorer small colleges. The brightest students are usually the youngest. Most 16- and 17-year-old boys are better off in high school than college. In most high schools the senior year is the strongest, and in most colleges the freshman year is the weakest.

Thousands of students are now leaving the high schools for the armed services and for jobs in industry and agriculture. Since state aid for schools in New York State is based upon attendance, it is expected that local school systems will face a revenue loss totaling several million dollars. The proposal to turn the high schools upside down at a time when their war adaptations are costly is termed the height of folly.

MONTANA SCHOOL BOARDS ASSOCIATION PROPOSES STATE-WIDE STUDY OF EDUCATION

At the seventeenth annual convention of the Montana School Boards Association, held in Butte, December 7 and 8, a resolution was adopted calling for a legislative appropriation sufficient to carry out a thoroughgoing study of elementary and high school education in Montana. The Legislative Assembly of that state meets for sixty days beginning the first Monday in January.

Miss Elizabeth Ireland, state superintendent of public instruction, presented a complete statistical report with comparisons with other years.

The proposed legislative program of the Montana Education Association was ably presented by Supt. I. B. Fee, of Missoula.

Dr. R. R. Renne, agricultural economist, now with the state Office of Price Administration, discussed the relation of the public school to the war effort. He suggested training young people for the necessities of war; that school authorities should direct the participation of students in the home effort, and laid stress upon the anticipation of the problems of peace and reconstruction.

Attorney General R. V. Bottomly told the assembled delegates of the effect of law and lack of law on the actions of school boards, emphasizing the fact that a board of trustees of a public corporation has no power except that conferred upon it by the legislature.

The delegates were kept up in the air by Clark Frasier, educational consultant for CAA, who presented a clear picture of the place occupied by the airplane in war, and in the future life of this country.

One of the high lights of the meeting was the banquet held the evening of the first day, at which a masterful address was presented by Mr. Paul L. Anderson, director of teacher training at the State Normal College.

Matters discussed by the delegates included the Victory Tax, teachers retirement, high school transfers, teacher tenure, consolidation of school districts, delinquent child legislation, budget limitations, increase in state appropriations for education, and transportation of pupils.

Officers elected for the ensuing year are: Mr. A. E. Dye, Roundup, president; E. H. Newell, Livingston, F. J. Jelinek, Miles City, and E. A. Lund, Wolf Point, vice-presidents; J. L. Gleason, Sr., Livingston, secretary-treasurer.

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IT PAYS TO standardize on Colgate-Palmolive-Peet maintenance soaps, as many large schools have discovered. For one thing, we can supply the right soap for every cleaning job. And, there's the convenience of getting all your soaps from one dependable source.

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Before you order your next supply of maintenance soaps, call in a Colgate-Palmolive-Peet representative and ask for details on the full line of C.P.P. maintenance soaps. Or write direct to our Industrial Department at Jersey City, N. J.

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The 1943 Shop Annual

OF INDUSTRIAL ARTS AND VOCATIONAL EDUCATION

Wartime Service Edition

War-Production Training is the "directive" now governing all industrial arts and vocational education work.

War-Production Training now keynotes the editorial service of INDUSTRIAL ARTS AND VOCATIONAL EDUCATION. The 1943 SHOP ANNUAL NUMBER — our second Wartime Service Edition — will again provide essential up-to-the-minute information on wartime school-shop organization, shop layout, equipment, and operations for the instructional forces of the nation.

READY FEBRUARY, 15, 1943

The SHOP ANNUAL NUMBER summarizes the periodic progress in the field of industrial arts and vocational education, emphasizes the new developments ahead, presents through actual shop layouts and equipment lists, the best methods of accomplishment in the school shop field. The service of the SCHOOL SHOP ANNUAL NUMBER (regular March issue) of INDUSTRIAL ARTS AND VOCATIONAL EDUCTION is

1. It renders a comprehensive service promoting the introduction, progress, and expansion of industrial arts and vocational education.

2. It provides an authoritative source of information and guidance in organizing, planning, and equipping school shops.

Single Copies $1.00 — Yearly Subscription, including Shop Annual Number, $2.50

INDUSTRIAL ARTS *and* VOCATIONAL EDUCATION

THE BRUCE PUBLISHING COMPANY

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343 Montgomery Bldg., Milwaukee, Wis.

NEW YORK CHICAGO

School Business Administration

CODE OF ETHICS FOR PUBLIC EMPLOYEES

I AM A PUBLIC EMPLOYEE

Mindful of the fact that I am but an integral part of the entire governmental structure, and that my employment is not a personal right, but a privilege embodying a trust.

I WILL BE LOYAL

For fidelity is the foundation upon which the structure of public service rests.

HONORABLE

For stability of the public service structure depends upon honor and integrity.

EFFICIENT

For efficiency creates public confidence and assures progress in public service.

DILIGENT

For the privilege of public trust demands my utmost endeavor in public service.

COURTEOUS

For courtesy greatly enhances both the value and efficiency of public service.

RESOURCEFUL

Ever seeking to extend my sphere or usefulness for the benefit of public service.

TOLERANT

Of the opinions and conduct of others both within and without the public service.

WATCHFUL

In public and private conduct to ever uphold the highest ideals of public service.

— Extract from the Code of Ethics of the City Clerk's Office, city of Los Angeles, Calif.

TEN SUGGESTIONS FOR THE CARE OF MOTORS

School-business executives may be interested in the following ten suggestions for the care of motors in school shops.

1. Open-type motors should be blown out weekly; those operating under severe conditions, daily. Use no more than fifty pounds of pressure to avoid possible damage to insulation.

2. Follow manufacturer's instructions in lubricating motors. Too much oil is as bad as too little, causing deterioration of insulation.

3. Inspect bearings weekly or oftener. Feel temperatures, examine for excessive end play, and make certain oil rings are working.

4. Inspect brushes and commutators weekly or oftener. Make certain brushes are seated perfectly and commutators are smooth. Use proper grade of carbon brushes to prevent wear of commutator and reduce sparking.

5. Where motors operate with excessive belt tension, check the air gap between rotor and stator every week. A monthly check of motors in average use is sufficient. Difference in the width of the gap around the circumference of the rotor will indicate extent of wear on bearings.

6. Where motor leads are exposed to view, check them weekly to see that connections are tight, well insulated, and protected, and free from oil.

7. Inspect ground connections weekly, keeping them tight and in good condition. This is for the protection of employees, and for the proper operation of overcurrent protective devices.

8. Set up a regular schedule for overhauling motors. Most motors should be overhauled annually, while those in severe use should be overhauled twice a year or oftener.

9. Dismantle the motor for a complete overhaul job. Wash all parts with carbon tetrachloride or some other safety solvent. Paint the windings with a good, oil-resisting insulating varnish.

10. Keep the area around the motor as clean as the motor. Arcing frequently ignites oily material that has not been cleaned up.

APPROVE BUILDING EXITS CODE

The American Standards Association, New York City, has approved the seventh revised edition of the Building Exits Code for 1942. Both engineering and occupancy degree requirements are treated in detail in the code. Items listed under the first heading and applying to school buildings include stairs and stair enclosures, ramps, fire escapes, doors, aisles and corridors, slide escapes, alarm systems, fire-exit drills, and lighting. The booklet, which contains 112 pages, is fully indexed, and sells at $1 per copy.

TEACHERS

► President Ellsworth B. Buck of the New York City board of education, has given assurance that no more regularly appointed teachers will be dropped from the school pay roll for the remainder of the academic year ending June 30. An improved financial condition, brought about by strict economy in school expenditures and by taking advantage of various situations traceable to the war, have made it unnecessary to carry out plans to drop some 500 teachers with the opening of the second semester in February.

► Princeton, Ind. Teachers, pupils, and other members of the school system have gone out 100 per cent for winning the war and the peace to follow. They have asked the board to deduct regularly from their pay checks for the purchase of war bonds. A number of teachers are buying bonds personally in addition to salary deductions. To date, the board has deducted $1,038.97 for the purchase of bonds.

► Two youths, Neil Simonelli and Joseph Annunziata, both under 20 years, stood before the court in New York City recently, and heard themselves pronounced guilty of murder in the second degree for the shooting of Erwin Goodman, a teacher in the Gaynor Junior High School, on October 2. The several teachers' organizations have reported the fact that teachers are occasionally subjected to attacks by students, resulting in physical injuries.

► Cambridge, Mass. The school board has voted to grant the teachers seven days' sick leave annually, with the sick leave retroactive over the past five years.

SCHOOL ADMINISTRATION

► The school board at Metuchen, N. J., has approved a new report card for use in the elementary schools. The card follows the so-called progressive or modern report form and space is provided for marks in (1) behavior, (2) work in home or neighborhood, (3) growth in home, (4) home duties, (5) attendance, and (6) health. Special attention is given to the serious consequences of irregular attendance and a report is made on physical conditions which may injure the child's health or retard his progress in school.

► The Office of Price Administration, in Washington, has announced that school children who work on farms will be eligible for the purchase of bicycles needed for transportation between school and home or farm.

► In Kansas City, Mo., Christmas workers, 1130 of them are wanted by downtown stores. Usually the high schools provide many, but this year there is a shortage. Of 361 pupils interested in working, 151 are under 16 and 201 already have jobs, leaving nine available.

► Whiting, Ind. The school board has introduced a course in preflight aeronautics in the high school. A number of special classes in chemistry will be added for girls who are preparing to engage in work in the local industries. A new training course of women giving training in inspection for war industries has been in operation since last June. The course which is given in six-week periods consists of 90 hours of work in the classroom and 12 hours in the machine shop. The course has proved very successful and practically all trainees have been placed in jobs in the war industries.

► Vincennes, Ind. A new physical fitness program has been introduced in the high school, with greater emphasis on health. Special courses are being offered in mathematics, physics, chemistry, and industrial arts. An elementary course in aeronautics is also being taught this year.

► La Moille, Ill. Evening war-production courses for rural farmers are being offered in the community high schools. The course will run for ten weeks.

► Kansas City, Kans. The board of education is sponsoring defense training classes in two senior high schools in which both day and evening facilities are available for six hundred more trainees. More than 8000 men and women have been trained and placed in war industries.

► Detroit, Mich. The board of education is cooperating with the War Employment Committee in conducting defense training classes for groups of lawyers. The course covers eight to ten weeks and the instruction includes aeromechanics, tool design, lathe operation, milling-machine operation, and electric welding. Daily work shifts of four hours are arranged for in the war plants.

► Angola, Ind. The high school is offering a preparatory course in methods and materials used in war production. The course includes inspection and testing of precision instruments, fitting and checking of threads, use of drafting tools, and related subjects.

► Rome, Ga. The Floyd County Vocational Schools are offering training in specialized work for those desiring to enter the war industries. In addition to four types of work offered in the vocational school, there will be classes in arc welding and blueprint reading.

► Oglesby, Ill. The school board has taken out workmen's compensation insurance, covering all teachers and school janitors. The new insurance is intended to protect school employees in case of accident and to protect the board from fees for doctors and hospital bills.

► Urbana, Ill. Under a new rule of the school board, high school pupils who enlist or who are drafted into the armed forces, and who have satisfactorily finished half a school semester, will be given credit for the entire semester. Seniors in their last semester will be given graduate credit.

► The school board of Houston, Tex., with one dissenting vote, has ruled that all public school children must salute the flag.

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... TRAPPED in a ceiling of Armstrong's Cushiontone

IT'S GOODBYE to noise demons and their efficiency-killing racket when your buildings have new ceilings of Armstrong's Cushiontone—the low-cost material that's repaintable and permanently effective.

484 deep holes in each 12″ x 12″ unit literally trap disturbing din. Up to 75% of the sound that strikes a Cushiontone ceiling never bounces back into the room.

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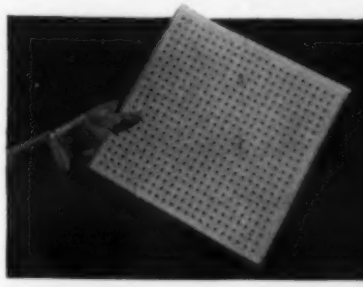

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New Books

State Responsibility for Organization and Administration of Education

By F. Ray Power. Bulletin 1, 1942, Southern States Work Conference on School Administrative Problems, Tallahassee, Fla.

The southern states have recognized the importance of developing a central educational authority capable of affording adequate leadership and guidance for the schools of the state. Recent trends in education have made it imperative that the state organization furnish more comprehensive services to local units and provisions have been made in the organization for supplying these services.

The present bulletin, which is intended to serve as a handbook for the general guidance of the participating states, offers a state plan of organization which will be helpful in bringing about needed improvements in each state.

In the establishment of a central board of education, the committee has presented the criteria under each of the sections for the evaluation of the organization of a central educational authority.

This central authority calls for a state board of education, with the members of the board selected to protect the schools and the state department of education from partisan political domination; provision for a chief state school official to serve as executive officer of the state board of education, and to administer and execute such policies and standards as may be established by law or by the state board; the establishment of a state department of education, with members selected to perform their duties on the basis of personal fitness, educational preparation and qualifications, and successful experience; and staff members with training and experience necessary for performing their duties. It is estimated that more than half of the members of the professional staff in the ten states hold either a doctor's or a master's degree.

The report also brings out the fact that the responsibility of the state department of education for rendering certain routine administrative services, for furnishing competent consultative services, and for exercising stimulating leadership cannot be questioned. In order to perform its functions, the state department of education must utilize all available means to study the existing educational program of the state. Research and survey functions of the state department must provide data by which all other functions of the department may be co-ordinated, facilitated, and improved. By these means, the state department of education will be able to appraise its own effectiveness and may be able to revise its program as the state public school system progresses.

Young America's English

By Helen F. Daringer & Frances G. Sweeney. Book One, 458 pages, $1.16. Book Two, 480 pages, $1.20. World Book Co., Yonkers, N. Y.

Seventh- and eighth-grade books planned to teach oral and written English through a series of pupil activities into which are woven lessons in grammar, composition, and speech.

The many cartoon drawings will interest the pupil. Some of them are very good and most of them are harmless. Those on pages 27, 89, and 292 of Book Two are objectionable for obvious reasons. The one on page 89 is especially bad.

Your Place in the War Program

Paper, 58 pages. Bulletin No. 1, September, 1942, of the Research Service of the American Association of School Administrators and the National Education Association, Washington, D. C.

An outline of a plan of organization and a war-activities program for elementary schools, showing how principals, teachers, and pupils may effectively participate.

Air-Age Education Series

By Hall Bartlett. Cloth, 167 pages. Price, 60 cents. The Macmillan Company, New York, N. Y.

This textbook aims to provide a nucleus of subject matter around which to build a social-studies program in harmony with this reorientation. The book deals with the influence of the airplane and the future of flight and discusses the legal aspects of aviation. The complex problems created by the air age are anticipated and broad educational needs for the air age are discussed.

Examinations on Aeronautical Knowledge for High School Students

Paper, 4 pages. Issued by the Civil Aeronautics Administration of the U. S. Department of Commerce, Washington, D. C.

These examinations serve two purposes: (1) to test the proficiency of students in the practical knowledge of preflight aeronautics, and (2) to credit proficient students with the meeting of the ground school knowledge requirements for the private pilot certificate. The examinations are not intended as a substitute for school examinations which the high schools may give as the basis for course credit.

Pre-Induction Training Courses in Electricity, Machines, Automotive Mechanics, Shopwork, and Radio

Prepared by the preinduction training section and the U. S. Office of Education. Paper, price, 10 cents each. Issued by the Government Printing Office, Washington, D. C.

A series of manuals containing outlines of courses for preinduction classes in the high schools. Contains lesson topics, demonstrations, exercises, standard symbols, and lists of equipment and visual aids.

Military Service in the Armed Forces

By Walter J. Greenleaf and Franklin R. Zeran. Paper, 48 pages. Price, 10 cents. Vocational Bulletin No. 221. U. S. Office of Education, Washington, D. C.

This pamphlet, prepared by two specialists in the occupational and guidance service of the U. S. Office of Education, presents information on the various branches of the armed services for young men and women interested in entering military service as a career or for the duration.

Modern Chemistry

By Charles E. Dull. Cloth, xxiv–604 pages. Price, $2. Henry Holt & Company, New York, N. Y.

A complete, modern text, in which the author has made an especial effort to develop chemical theory in a clear, concise, logical order. Effective devices are used to enable the student to secure a good understanding of beginning chemistry and to apply his knowledge to present-day life.

Shadow Catcher

By Julia Carson. Cloth, 215 pages. Price, $2. Longmans, Green & Company, New York, N. Y.

Julia Carson has created a mild mystery story—replete with suspense and gay adventure—for boys and girls in their early teens. Save for a few too maturely subtle innuendoes and one or two overly gullible human beings, the narrative has a fresh, youthful candor and simplicity not unlike that possessed by the readers for whom it was intended. — *M. S. B.*

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TEACHERS realize that calculating machine operation and business arithmetic is one of the most important parts of a school's curriculum. They have seen that this training gives added value to their pupils — that it makes for sure jobs, higher pay and faster advancement.

That's why schools everywhere are using Monroe Adding-Calculators in their office practice courses.

Schools having installations of Monroe Educators and other Monroe Adding-Calculators are meeting the demand created by the war emergency for graduates to fill wartime jobs where calculating machine experience is important. Call the nearest Monroe branch or write our Educational Department for further information in adapting your equipment and courses for war time instruction.

MONROE CALCULATING MACHINE COMPANY, INC.
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With the advent of priorities on steel, Clarin has designed a superior folding chair of hardwood, bearing no comparison to the average cheaply constructed wood chair of the past.

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No rough edges to catch clothes or hose. Besides, only the Clarin has the exclusive automatic locking device when opened, making it doubly safe and rigid.

The chair with the AUTOMATIC POSITIVE LOCK

CLARIN MANUFACTURING COMPANY
4636 W. Harrison St. CHICAGO, ILLINOIS

SCHOOL BUILDINGS AFTER THE WAR

(Concluded from page 19)

tive and careful planning well in advance of actual construction. The number of architectural firms in the entire United States, qualified by experience and educational interests to develop new plans and designs to meet the needs of future schools in a manner that takes full advatage of the functional use of new methods and materials, is very limited and the work of these architects, as well as that of others, will profit immeasurably by time for adequate study.

To our minds, the most praiseworthy factors in the planning and construction of the Crow Island school building at Winnetka, Ill., were the unusual cooperative studies by the architects, school officials, and landscape gardener. Here is a school system employing appropriate and suitable conveniences for an environment that would facilitate and encourage pupil activity. The architect, Mr. Perkins, after weeks of firsthand observation, caught the spirit of what was being attempted in the school. Then, and only then, could he be in position to present adequate solutions for study and criticism. No postwar building should be attempted without this sort of deliberative co-planning.

Many State Codes Obsolete

Another improvement in the problem of postwar school-building planning, and one that we predict with less confidence, is greater freedom from the many obsolescent and outmoded state school-building codes that so frequently hamper architects and school officials. What a boon to progress in school design and construction would result if many states could adopt a school-building code patterned after that in use in the state of Connecticut! This code, revised in 1941 by John E. Nichols, Supervisor of School Buildings and Plans, contains complete information, illustrations, and suggestions for architects and school officials. Its presentation is in the spirit of suggestion rather than finality. The way is left open for the architect to take his sketch plan to this expert in education and school planning for consultation and advice, as well as decisions on requirements. No progressive step is ever denied a fair hearing or a trial — and, in fact, new notions with promise of development and progress are consistently encouraged. Unfortunately, many states are not favored with the open-mindedness of Connecticut.

In hazarding these predictions of things to come, the writers have colored them with their hopes. It is a safe assertion that after this war America will still be the richest nation on earth, and our greatest assets will *not* be our fields, rivers, and mountains, or even our mass production facilities — but our children. Our greatest heritage to them will be the depth of culture and practical adaptation of our educational system to a balanced life in a world of democracies. For what else do we wage all-out war?

WHY LANDSCAPE THE SCHOOL GROUNDS

(Concluded from page 28)

child will not have opportunity to dig or plant in the schoolyard. But he can observe. From the perennial mystery of spring; from the hedge plants that sacrifice their individuality — and at the same time express it — by growing together in fullest cooperation; from the grass plant that suppresses its individual stardom for the good of the whole team — the smooth sweep of lawn; and from the healthy, proved specimen tree that is permitted to soar to personal glory — from all of these there is much the school child can learn.

In an early issue of the JOURNAL I shall take up the practical questions of planting the schoolyard, and suggest named varieties of less common trees and shrubs, including the evergreens.

PERSONAL NEWS

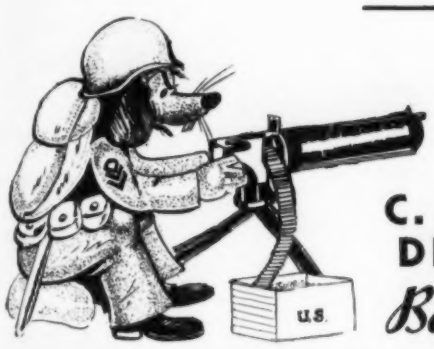
► W. A. BASS, superintendent of the city schools of Nashville, Tenn., has been re-elected for a new five-year term, beginning with January, 1943.

► HENRY SPURGEON VAN DEREN, business manager of the board of education, has also been re-elected for a similar term, beginning with January, 1943. He was elected to the position in 1898.

► ROY SCANTLIN, Neosho, Mo., has been elected State Superintendent of Public Instruction of Missouri. He succeeds Lloyd King.

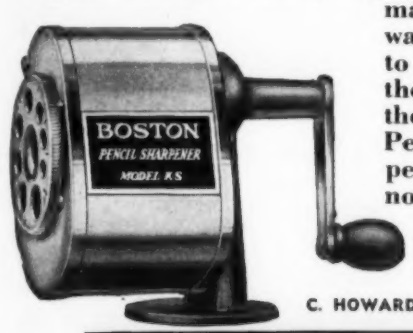
► M. L. OLSEN, of Canton, S. Dak., has been elected superintendent of schools at Alexandria, to succeed Nevin J. Platt, who has entered the armed service.

► JENS E. JENSEN, secretary of the Ash-Clif high school board at Ashkum, Ill., died in a hospital on November 1.



C. HOWARD DEVILDOG *Barks:*

Everyone understands why he can't get the choice of a full line of Boston Pencil Sharpeners during wartime. Scientific skill, engineering ability, needed materials must go into war production. So, stick to good old model KS for the duration and get all the advantages of Boston Pencil Sharpeners wrapped up in this one economical model.



Yes, it's the doggy thing to do to buy War Stamps and Bonds with the savings KS brings you!

C. HOWARD HUNT PEN CO., Camden, N. J.

BOSTON
PENCIL SHARPENERS

DRAPER *Sight-Saving* SHADES

MADE SPECIALLY FOR SCHOOL USE

Here Is How DRAPER SHADES Contribute to Better National Health

Defective eyes cause 11% of the rejections at local Selective Service boards. The government says "Many of these rejections could have been avoided by wise forethought and intelligent action."

Oftentimes eyestrain has its beginning in the school room due to improper window shades. To help remedy this condition, leading schools throughout the country now specify Draper's Sight-Saving shades. They screen the glare and spread light evenly to all parts of the classroom in just the proper amount. These superb shades demount instantly and completely for cleaning and window washing and reduce shade maintenance cost to a minimum.

Draper Shades are specially made for every school requirement . . . in translucent or darkening types.

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Manual and Samples

LUTHER O. DRAPER SHADE COMPANY
Dept. AA-1 SPICELAND, INDIANA

Your Country Needs the Help of Your PROJECTOR!

Knowledge is power—and the more Americans learn about the war through motion pictures, the sooner the hour of Victory.

Hundreds of timely films are available through the Filmosound Library on a purchase or rental basis. Some are mentioned below. Use the coupon for obtaining complete list from the Filmosound Library in Chicago.

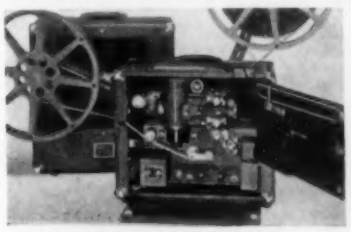
SHOW THESE NEWEST FILMS FOR VICTORY!

AIR FORCE and NAVY films—now available for preflight and preinduction high school training courses. Many other Government war films, also, at nominal service charge.

NORTH AFRICA—two new sound films by Count Byron de Prorok; timely for educational and inspirational value. Select films on every war theater.

GOOFER TROUBLE—typical British Civilian Defense film which treats a grim subject in a light vein. More than 200 British films are available. Send for special catalog.

OUR TOWN—Thornton Wilder's Pulitzer Prize play brought to the screen as a "Ten Best" selection. The film has been cut for school use. Hundreds of other feature films.



The New V.... FILMOSOUND

This new, compact, precision-built projector has every feature required for finest reproduction of 16mm. sound and silent motion pictures. It is a typical Bell & Howell engineering achievement, bringing unexcelled B&H performance in spite of restricted use of critical materials needed for war production.

"E" FOR EXCELLENCE—how the Army-Navy Award for extraordinary performance is won and presented is shown by this one-reel sound film. Service charge 50c.

Bell & Howell Co., Chicago; New York; Hollywood; Washington, D.C.; London. *Est. 1907*

BELL & HOWELL COMPANY, 1814 Larchmont Ave., Chicago, Ill.
Without obligation, please send me, free:
( ) Catalog of British Civilian Defense Films;
( ) Detailed information on new Filmosound Model V;
( ) Details on new films from Filmosound Library;
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Address.....
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Designed School Buildings costing $3,500,000 in 1939-1940

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A Superior Agency for Superior People
We Register Only Reliable Candidates
Services Free to School Officials
Member National Association of Teachers' Agencies

FINANCE AND TAXATION

► Medford, Mass. The school board has adopted a budget of $1,108,347 for the school year 1942–43, which is an increase of $2,797 over the year 1941–42.

► Madison, Wis. The 1943 budget of the school board calls for a total of $1,454,491, which is an increase of $90,353 over last year.

► Kenosha, Wis. The school board has adopted a budget of $912,057 for the school year 1943, which is a substantial increase over the year 1942. The increase is attributed to increases in salaries for teachers, janitors, and school employees. Of the total amount, $833,190 will be raised by taxation.

► New Bedford, Mass. The school board has adopted a budget of $1,430,756 for the school year 1943, which is an increase of $76,000 over the year 1942.

► Lawrence, Mass. The total school budget for 1943 has been set at $1,080,697, which is a decrease of $22,368 from the estimate of 1942.

► Munising, Mich. The voters of the township school district have approved an increase of three mills in the tax rate for a period of five years. The increased funds will be used for school purposes.

SCHOOL-BUILDING CONSTRUCTION

Dodge reports for the month of November that contracts were let for 493 educational and science buildings in 37 states east of the Rocky Mountains. The contract value of these buildings was $11,583,000.

SCHOOL-BOND SALES

During the month of November, 1942, school bonds were sold in the amount of $2,246,550. The average interest rate was 2.16 per cent. During the same period, short-term paper, refunding bonds, and tax notes were sold, in the amount of $1,196,399.

No. 141

Seat 15" wide, 14½" deep

How To Solve Today's Seating Problems—

—as to price—durability—availability Brunswick folding chairs meet all of these requirements. They're reasonably priced . . . . they're made of tough Virginia Oak that will withstand years of hard usage. Brunswick production schedules are such that you can be assured of reasonably prompt delivery.

Ask today for literature about the entire Brunswick line . . . giving prices and other necessary information. There's no obligation, of course.

BRUNSWICK SEATING CORP.
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LAWRENCEVILLE VIRGINIA

Something you can do today.

Renovate and improve your stage equipment. We have a special department for dry cleaning.

Still available—new materials from stock.

Write for complete information:

MORK-GREEN STUDIOS, INC.

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Murdock O. D. F. Parts Obtainable

We can supply parts of Murdock Outdoor Drinking Fountains without delay on priority ratings of A-10 or better.

Complete fountains, however, are out for the duration.

As the war weeks turn into months we hope you will have many occasions to say "It pays to buy MURDOCK."

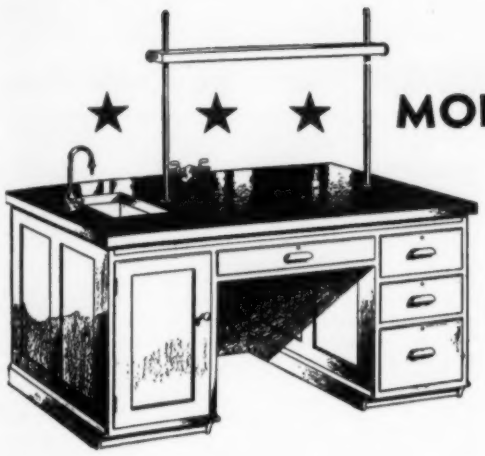
THE MURDOCK MFG. & SUP. CO., 426 Plum St., Cincinnati, Ohio

MURDOCK
The Most Reliable Name on Water Service Devices

ILLINOIS

90% of all school laboratory equipment is made by only 3 manufacturers—Hamilton, Kewaunee and Sheldon. All three use Illinois Locks exclusively.

THE ILLINOIS LOCK CO.
CHICAGO, ILLINOIS



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No matter whether you are starting "all over" or if you are expanding your laboratories, you can expect and get more intelligent help in planning your project from Peterson experts. Fifty years of experience in knowing how to arrange and how to build quality furniture is the logical basis for your complete satisfaction on both quality and price.

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818 W. WINNEBAGO ST. · MILWAUKEE
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PEABODY "No-Tip" No. 70 FOLDING CHAIRS $17.25 Per Doz.

Peabody Folding Chair No. 70

A strong, easy-to-fold, light weight folding chair, built to give comfortable seating at low cost. It will not tip when children stand on it. Folds flat — stacks easy — requires little storage space. No. 70, per dozen — $17.25 f.o.b. factory. No. 75 Kindergarten Folding Chairs only $13.75 per dozen, f.o.b. factory.

Schools must be maintained in spite of war. Increased student enrollments must be accommodated. Additional seating must be supplied. The steel is now being converted to war materials. New metal seats are therefore not available until further notice.

Peabody recommends extra care for seating now installed. Have the Peabody representative help you in getting broken seats repaired — unsightly seats refinished — and have him help work out better seating arrangements to make present rooms handle more students.

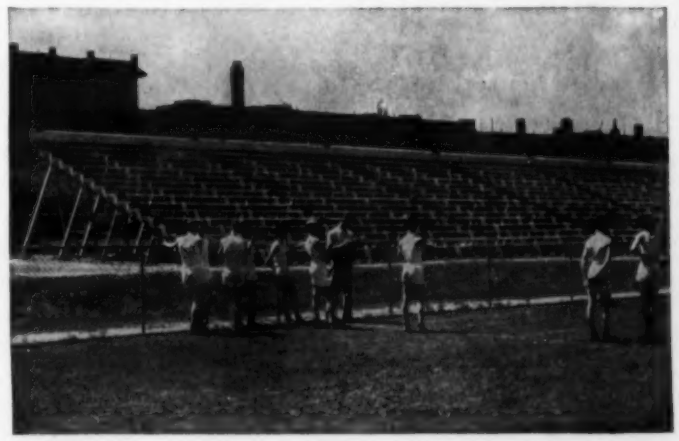
Folding chairs will probably be the answer to your temporary problem. To meet your needs Peabody recommends Folding Chair No. 70. You can get this chair in any quantity for only $17.25 a dozen, f.o.b. the factory. Prompt delivery is assured. See your Peabody representative or order direct.

PEABODY SEATING COMPANY

BOX 1 NORTH MANCHESTER, IND.

UNIVERSAL BLEACHERS

LET US FILL YOUR NEEDS WITH STOCK SHIPMENTS



● UNIVERSAL WOOD PORTABLES are made of extra heavy, select materials. The "A" shaped horses are cut and drilled on steel templates to assure full uniformity. All seat and foot boards are select Douglas Fir, edge bolted to prevent splitting; all metal parts are oversize. The stringer nose is steel shod and fits securely into a steel stirrup iron on the sill, forming a non-slip pressure joint with the center of thrust near the center of the stringer; while our 100% bolted construction gives added safety. Erection or dismantling is easy without the use of numerous or special tools.

Write today for informative bulletins.

UNIVERSAL BLEACHER COMPANY

CHAMPAIGN, ILLINOIS

New Supplies and Equipment

Production, Service, and Sales News for School Buyers

POLAR VIEW WORLD GLOBES

"The Internationalist" 12- and 16-in. diameter and "The Educator" 12- and 16-in. diameter polar view globes of the world are distinct additions to the available apparatus for teaching the science of geography and have an added value to the science of aeronautics. Newly mapped and mounted, and with added and timely instructional accessories, these teaching tools will receive a splendid welcome.

The Educator is furnished with the Great-Circle-Meter, a printed dial mounted on the horizon ring and completely encircling the globe ball, making it easy to trace and accurately measure in air miles the great circle routes between cities or geographical place names.

The Internationalist has attached the Great-Circle-Rule, a flexible tape measure with special markings for tracing and measuring great circle routes.

In the mountings of the Educator and Internationalist axes, meridians, and conventional trappings are removed, leaving the globe balls free for bird's-eye view of the earth's surface.

Weber Costello Co., Chicago Heights, Ill.

For brief reference use ASBJ–110.

ILLUMINATING ENGINEERING AWARD

In the absence of other awards the Wakefield Award will tend to encourage a continued academic interest in the Illuminating Engineering Society. The Wakefield Award is given to the "top man" enrolled in any Illuminating Engineering Course in the universities throughout the United States and Canada. The student is designated by the professor in charge, and the expenses of admission are covered by the company.

National adoption of the plan has brought the student into touch with the professional society, and fresh viewpoints accrue annually to college men.

The F. W. Wakefield Brass Co., Vermilion, Ohio.

For brief reference use ASBJ–111.

WAR-PRODUCTION TRAINING

Helpful material for training lathe operators, recognizing the urgent need for speeding up the instruction of new workers in industry, have been prepared by the South Bend Lathe Works. Brief descriptions of motion picture films, instruction books, bulletins, wall charts, and blueprints, are included in a four-color, four-page circular No. 21–C.

The importance of proper lubrication and care of lathes is stressed in a 19-page, illustrated booklet, Bulletin H–2, the second of a series of Lathe Service Bulletins.

South Bend Lathe Works, South Bend, Ind.

For brief reference use ASBJ–112.

THE CAUCASIAN BARRIER

Filmosound Library announces a new single-reel sound film, photographed and narrated by Carveth Wells, and edited by Wm. F. Kruse.

The Caucasian Barrier is an impressive educational picture of an area now prominently in the news.

Bell and Howell Company, 1801–1815 Larchmont Avenue, Chicago, Ill.

For brief reference use ASBJ–113.

PROJECTION SCREENS

Engineered to achieve strength and rigidity, with a minimum of weight, Radiant "Hy-Flect" glass-beaded projection screens are available for prompt shipment. No changes in materials have been necessary and shipments are made from stocks.

Constant use of projection apparatus at the present time makes a portable screen a prime necessity. A large line with exclusive features are in the stocks of

Radiant Manufacturing Corp., 1140–46 West Superior Street, Chicago, Ill.

For brief reference use ASBJ–114.

SCHOOL OF THE AIR

CBS Department of Education, Lyman Bryson, director, have issued the Teachers' Manual for 1942–43. The School of the Air takes on an added interest at the present time as the Federal Government has announced that it will be, for the duration of the emergency, the official channel through which the Office of War Information will convey news, information, and instructions for civilian activities to children and young people, teachers, and parents of America. Service to the government will be the controlling factor in program planning as the school must be adapted to wartime use.

It is hoped that such changes in the program as are made to meet the war emergencies will not interfere with the educational purposes, nor with plans of teachers to make the greatest use of the broadcasts.

Columbia Broadcasting System, Inc., 485 Madison Avenue, New York, N. Y.

For brief reference use ASBJ–115.

ALL-SERVICE WOOD FOLDING CHAIR

Now in stock for immediate delivery are the American All-Service Wood Folding Chair and the All-Wood Universal Table. A wide range of utility is provided by these numbers for school use in classrooms, library, study halls, and cafeteria and they offer an excellent general purpose type of seating. The chair alone serves admirably as supplemental seating wherever the need is found.

Legs and stretchers are of selected straight-grained hardwood. Backs and seats are of 7/16 in. cradle formed

New "All-Service" Furniture

resin-bounded plywood of birch, beech, or gum. All joining hardware is bonderized and finished in baked enamel. Woods are durably finished.

Tables are available in a range of sizes to accommodate from four to eight pupils. Construction is characterized by the absence of corner legs, stretchers, and other structural members which interfere with the knees and legs of the occupant. Built to quality standards throughout, they are recommended for every purpose from kindergarten through college.

American Seating Company, Grand Rapids, Mich.

For brief reference use ASBJ–116.

WAR CASUALTY

The sorely wounded and disabled typewriter depicted is a veteran of a sea battle. It was hit by a Japanese incendiary bomb which burnt up everything in the room, including the table on which it was standing. The hole in the carriage was caused by a bomb.

Uncle Sam needs 600,000 typewriters of which 84 per cent are to go to the Army and the Navy. Typewriter manufacture has given way to war work. Machines needed for the armed services must come from private industry which is requested to sell "1 out of 4" machines to the government. Typewriters so turned in will play a vital role in the war effort and ultimate victory.

Publications of Interest to School Business Executives

Building Exits Code, 1942

Paper, 109 pages. Price, $1. National Fire Protection Association, 60 Batterymarch St., Boston, Mass.

This code, now in its seventh edition, seeks to set up life safety requirements for all types of buildings. The requirements are revised and perfected from year to year by a special committee entrusted with this work.

This code is particularly significant at this time when planning is being done for future building programs.

Passive Protection for Industrial Plants

Paper, 45 pages. U. S. Office of Civilian Defense, Washington, D. C.

The program of passive plant protection includes the protection of production, personnel, property, materials, and products from the effects of air raids. The program which is designed for large plants, may be adapted to any school plant according to its needs.

Gas Systems for Welding and Cutting

Paper, 22 pages. Bulletin No. 51, October, 1942, of the National Board of Fire Underwriters, 85 John St., New York, N. Y.

New standards for the installation and operation of gas systems for welding and cutting.

Federal Specifications

The Bureau of Standards has issued the following federal specifications of possible interest to school-board executives:

LLL — F–321b. Fiberboard, insulating, 5 cents.
MM — 751c. Lumber and timber, softwood, 5 cents.
SS — 310. Tile, drain, clay, 5 cents.

International Economic Development: Public Works and Other Problems

By Lewis L. Lorwin. Paper, 111 pages. Price, 30 cents. Bulletin No. 7, October, 1942, of the National Resources Planning Board. Published by the U. S. Government Printing Office, Washington, D. C.

This report traces the economic backgrounds of public works, describes the methods by which it has been applied in practice, and analyzes further possibilities for international programs that will help economic stabilization and development. It opens up a field which is becoming of increasing importance especially for the nation's of the western hemisphere.

Air Raid Precautions for Elementary Schools

Paper, 7 pages. Bulletin No. 2, November, 1942. Issued by the Division of Safety Education, Cleveland Public Schools, Cleveland, Ohio.

This air-raid bulletin, prepared by a committee of school officials, under the direction of F. Leslie Speier, is intended to provide the maximum protection for pupils in the schools in the event of an air raid during school hours. It provides for air dispersal drills and building drills, and outlines the procedure to be followed during air raids. Shelter areas, assembly points, and dispersal from assembly points are indicated in the rules.

School Transportation in Wartime

Prepared under the direction of F. R. Noffsinger. Paper, 101 pages. Published by the American Automobile Association, Traffic Engineering Department, Washington, D. C.

A handbook containing policies and procedures for meeting problems in connection with the administration of the school transportation program.

Training for Safety

Prepared and edited by D. V. Duryee and Harriett H. Carr. Paper, loose leaf, 155 pages. Published by the State Board of Control for Vocational Education, Lansing, Mich.

A complete program for teaching safety in the school shops.

WARTIME MOTION PICTURES

The Office of War Information has made an appeal that projecting apparatus be kept working all the time. The Bureau of Motion Pictures calls attention to the films being produced and distributed for school and community use. These films are informational, designed so that the American people will better understand the progress of the war.

Three aviation films are included: "Bomber," "Winning Your Wings," and "Target for Tonight." Five films showing war production in factories and on farms: "Bomber," "Tanks," "Lake Carrier," "Democracy in Action," and "Home on the Range."

OWI points out that audiences are available everywhere, wherever there is a gathering of American citizens. OWI urges the use of the films to keep the projection apparatus busy. "Keep *your* projectors working to win the war."

Complete information concerning these films may be had from

Bureau of Motion Pictures, Office of War Information, Washington, D. C.

After the Meeting

No Harm Done . . .

A professor insisted that the students take copious notes of each lecture, write them up, and hand them in at the end of each week. He was, in effect, getting his own lectures back, and some of the students questioned if he ever read the papers.

One day one boy decided to test this theory, and in the middle of the paper, he inserted the text of the Lord's Prayer. The paper came back with the usual check mark, indicating the prof had handled it, but with no comment concerning the insertion. This convinced the boy that the papers were not scanned, and one day he decided to confront the prof with the evidence.

"How closely do you read our papers, Professor?" he asked.

"Oh, I manage to go over them pretty well," the older man replied.

"Well, did you know that I wrote the Lord's Prayer in the middle of one of my papers not long ago?"

"Did you?" replied the Professor without a trace of a smile.

"Yes, I did."

"Did it hurt you to write it?"

"No, I can't say that it did."

"Well, if didn't hurt me to read it." — K.P.V. Philosopher.

Not Caught

TEACHER: "How many do six and four make?"
WILLIE: "Eleven."
TEACHER: "Think again."
WILLIE: "Twelve."
TEACHER: "No."
WILLIE: "Thirteen."
TEACHER: "But you are getting worse and worse. If you are determined to guess, why not guess ten."
WILLIE: "Ah, I know that isn't right — five and five make ten."

Progress

The lady bountiful took pity on a poor farm hand and got the village schoolmaster to teach him to read. One day she met her protégé.

"Well, George, I suppose you can read the Bible fairly easily now?"

George: "Bless you, mum, I was out of the Bible and into the racing news over a week ago."

The new homework involves complications when father attempts to help junior. — Chicago Sun.

NEWS OF OFFICIALS

► The school board at Altoona, Pa., has reorganized with WILLIAM F. LEHMAN as president, and J. FOSTER MECK as vice-president. Both Mr. Lehman and Mr. Meck were re-elected for their fourth consecutive terms. Mr. Meck has been a member of the board for 22 years and has served two years as president.

► DR. EDMUND J. GANNON, of New York City, now on leave with the armed forces at Fort Eustis, Va., has been sworn in as an examiner for the board of education. Before his election as an examiner, Dr. Gannon was principal of Junior High School 29, in the Borough of Brooklyn.

► EARL W. JERLES, a member of the school board at Redkey, Ind., died in Muncie on November 16.

► KENNETH M. BURRELL has been appointed acting superintendent of schools at Peoria, Ill., to succeed G. E. Dille.

► GEORGE B. MARTIN has been elected superintendent of schools at Caro, Mich., to succeed George R. Robinson.

► SUPT. C. A. WEBER, of Galva, Ill., has been elected to membership in the Society for the Advancement of Education.

► SUPT. W. A. BASS, of Nashville, Tenn., has been re-elected for his second five-year term.

► SUPT. LANNING MYERS, of Wildwood, N. J., has been re-elected for a five-year term.

COMING CONVENTIONS

January 9. Massachusetts High School Principals' Association, at Boston. William D. Sprague, Rowley, secretary.

January 31–February 2. Kansas Association of School Boards, at Hutchinson. P. J. Newman, Manhattan, secretary.

February 4. Pennsylvania Association of School Board Secretaries, at Harrisburg. Ralph E. Boswell, Harrisburg, secretary.

February 4–5. Pennsylvania State School Directors' Association, at Harrisburg. Preston O. Van Ness, Harrisburg, secretary.

February 10–12. Minnesota State School Board Association, at St. Paul, Minn. John E. Palmer, Fergus Falls, secretary.

February 17–20. National School Supplies and Equipment Association, at Chicago, Ill. Lew Parmenter, Chicago, secretary.

February 26–March 2. American Association of School Administrators, at St. Louis, Mo. S. D. Shankland, Washington, D. C., secretary.

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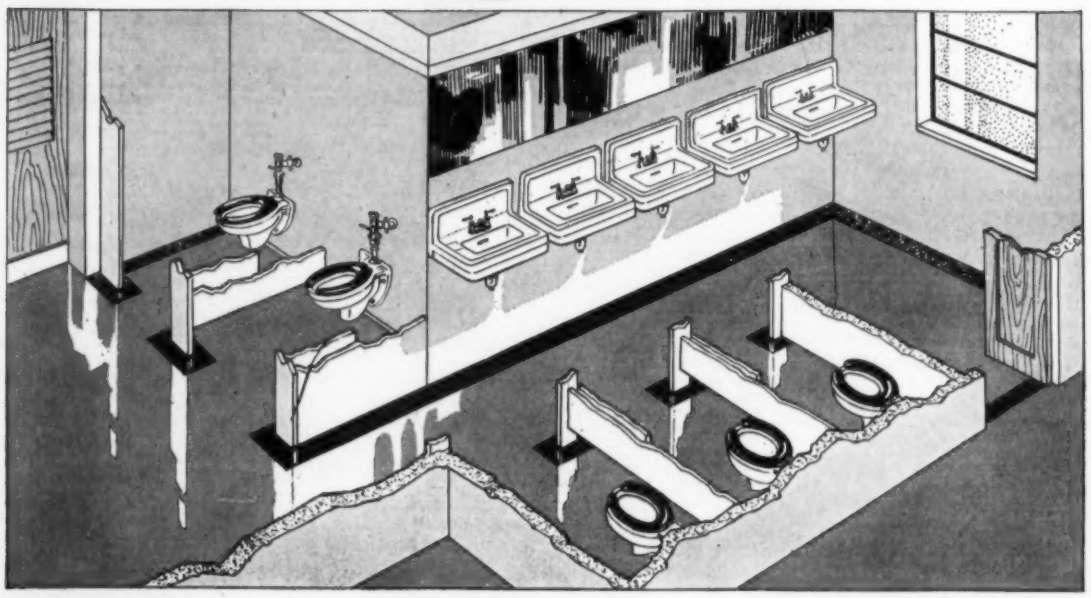
FOR TODAY'S EMERGENCY

for tomorrow's planning



DURING the war emergency, new school construction and modernization must, of necessity, be reduced to a minimum. When unavoidable replacement becomes necessary, Crane has developed special fixtures designed to use a minimum of vital material—lavatories of china, for example, with fittings of cast iron, instead of brass.

Many schools, however, are already anticipating tomorrow's needs, and plans are being prepared for construction to start when the war is over. For such construction, Crane designers and Crane laboratories are today working on new sanitary equipment—equipment that will stand up under the hard usage to be expected in public service.

In the meantime, it is important that school plumbing be checked regularly by a Plumbing Contractor to see that it operates at maximum efficiency. There is a licensed Plumbing Contractor in your community—why not consult with him?

CRANE

CRANE CO., GENERAL OFFICES:
836 S. MICHIGAN AVE., CHICAGO

VALVES • FITTINGS • PIPE
PLUMBING • HEATING • PUMPS

NATION-WIDE SERVICE THROUGH BRANCHES, WHOLESALERS, PLUMBING AND HEATING CONTRACTORS